1987 INFORMATION SERVICES

INDUSTRY REPORT

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1987 Information Services Industry Report

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Abstract

This report is a comprehensive look at the Information Services industry in 1986 and 1987. Performance is analyzed for companies which offer processing services, software products, professional services, and turnkey systems.

For each of these modes of software and services delivery, the report provides statistics and analyses covering the market, the distribution of revenue by type of company, and case studies of public companies in each market.

This report contains 95 pages, including 50 exhibits.

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I

Introduction

I

Introduction

A

Purpose

This INPUT Information Services Industry Annual Report is designed for industry managers and financial analysts who wish to gain a fuller understanding of the size, growth trends, and key issues of this rapidly changing industry.

B

Scope

The data contained in this report resulted from the integration of numerous INPUT research programs:

- An extensive, ongoing interview program yielded the primary research data that represents much of this report (see Methodology section). The questionnaire used in this program is included as Appendix B.

- INPUT's Company Analysis and Monitoring Service (CAMS) tracks over 4,000 information services companies. CAMS data was used to verify and supplement data obtained from the interview program outlined below.

- Data on public companies was obtained from INPUT's Vendor Financial Watch (VFW) which tracks the quarterly financial performance of over 125 public information services companies. Company data is obtained from annual reports, 10-K reports, and other published sources, supplemented by INPUT estimates when data is not yet available.

- Financial data provided in the VFW include each vendor's revenue and net income, reported on a calendar quarterly basis. Comparisons on performance are provided for:

  - 1986 versus 1985 (year on year, by quarter).

  - 1986 versus 1985 (year on year).

- Last nine months' results compared to the year earlier period.

- Last six months' results compared to the year earlier period.

The information contained herein is based on vendor revenue except where noted as user expenditures, which are provided in INPUT's annual forecasts. Due to double counting and dollars that pass through a variety of distribution channels, user expenditures differ from vendor revenue for most delivery modes.

A list of related INPUT reports is included as Appendix C.

C

Methodology

From January through April 1987, INPUT interviewed approximately 1,000 information services vendors. The major research activities included:

- A census of 372 companies with annual revenues of $10 million or more from noncaptive U.S. information services.

- A stratified random sample of companies with noncaptive U.S. annual revenue greater than $250,000, but less than $10 million.

The revenue data in this report, unless otherwise noted, includes only the following:

- U.S. revenue - Only revenue derived from products or services sold in the U.S. All foreign revenue is excluded.

- Information services revenue - Revenue from processing services, software products, professional services, and turnkey systems. Revenue from hardware-only sales, telecommunications, and field engineering services are excluded.

- Noncaptive revenue - Only revenue available to all vendors in a competitive marketplace is included. Revenue derived from sales to parent of affiliated organizations is excluded.

- Calendar year revenue - Approximately 30% of the companies have fiscal years that do not coincide with calendar years. Revenue of these companies has been adjusted to a calendar year basis for consistency.

All revenue data was rounded to the nearest $1,000 when gathered and tabulated, then rounded to the nearest $1 million when reported in this study.

- Rounding to the nearest $1 million was done to normalize for the lesser degree of accuracy where data was estimated by INPUT.

- Revenue reported by private companies, subsidiaries of larger corporations, computer manufacturers, and CPA firms is generally subject to a wider margin of error than is revenue of other companies.

Companies that are not exclusively involved in information services are identified as follows:

- If a division or its subsidiary markets all information services for a company and is generally known by the name of that group, then it is identified by that name rather than the parent's name. An example is Boeing Computer Services Company.

- If more than one division or its subsidiary markets information services, the information is included in, and identified by, the parent's name. An example is Control Data Corporation.

- Organizations are reported according to their legal status as of the end of December, 1986.

Companies have been classified according to the mode of service from which they derive the largest proportions of their U.S. noncaptive information service revenue. The modes of service, defined in detail in Appendix A, Section B, include processing services, software products, professional services, and turnkey systems.

II
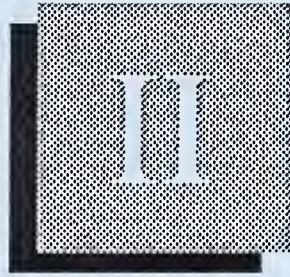
Executive Summary

II

Executive Summary

A

Information Services Industry, 1986

Information services revenue continued to grow steadily in 1986, increasing from approximately $46 billion in 1985 to approximately $54 billion. Revenue increased 16%, compared to 15% in 1985 (see Exhibit II-1). Information services growth is expected to accelerate over the next five years.

Information services from processing/network services companies (those with a majority of their information services revenue derived from processing/network services) grew 13% from 1985 to 1986. This figure includes growth in information services revenue that processing/network services companies generate from the other delivery modes—software products, professional services, and turnkey systems. Total revenue for the group reached $21.3 billion in 1986.

Information services revenue from companies that generate the majority of their information services revenue from software products grew 24% during the year. Again, this growth figure includes revenue from the other delivery modes. Total revenue for this group reached $14.8 billion in 1986.

Likewise, professional services companies revenue grew 20% between 1985 and 1986, increasing to $11.1 billion.

As a group, turnkey systems companies revenue grew only 8% during the year. Revenues were $6.9 billion in 1986.

Processing/network services companies, software products companies, and professional services companies made significant gains in terms of revenue growth from turnkey systems, although turnkey systems remained the smallest source of revenue for each of these groups of companies.

For a breakdown of 1985 and 1986 revenues by type of company, see Exhibit II-2.

EXHIBIT II-1

REVENUE GROWTH IN THE
INFORMATION SERVICES INDUSTRY, 1970-1986
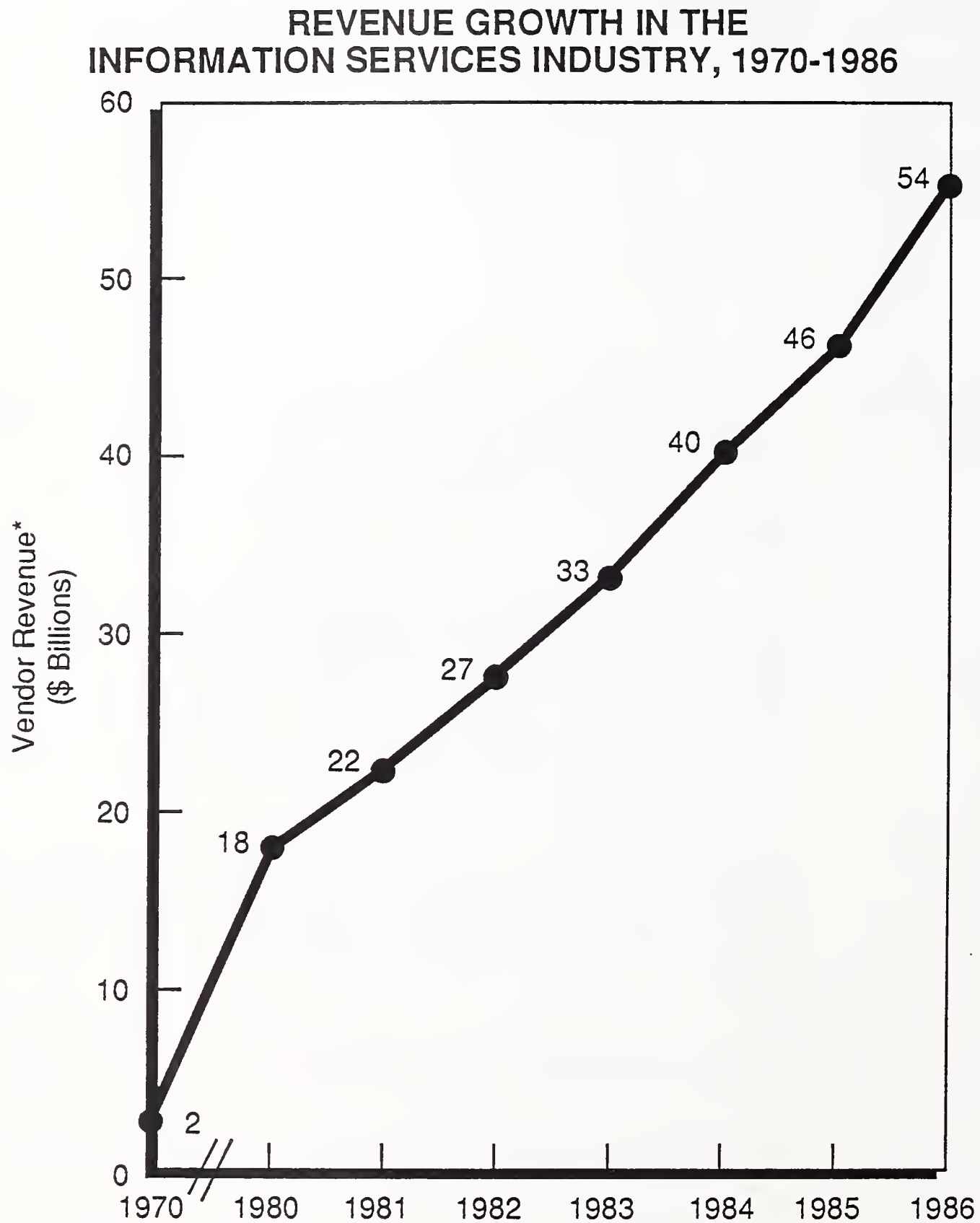
*Note: Definition changes have slightly affected gross market sizes on a year-to-year basis.

EXHIBIT II-2

REVENUE DISTRIBUTION BY TYPE OF COMPANY
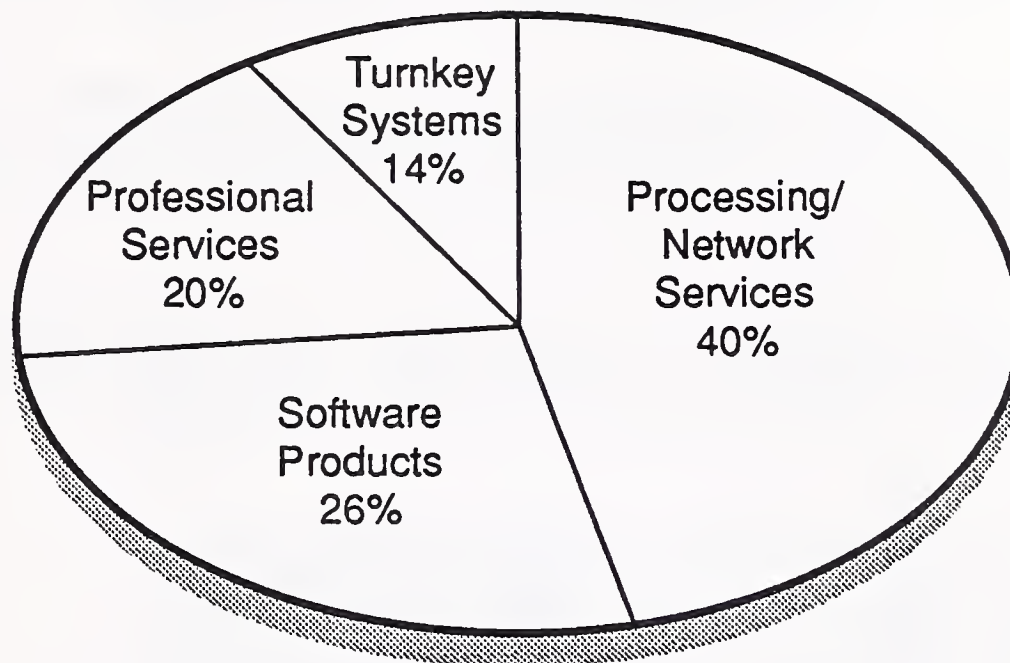
1985

$46.4 Billion
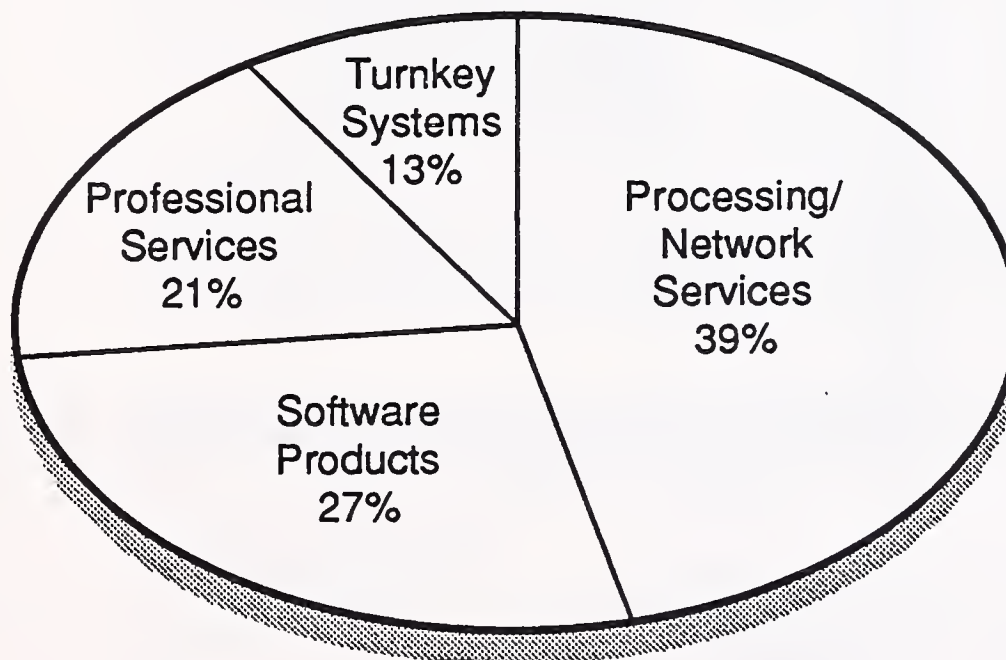
1986

$54.0 Billion

B

Information Services Market and Trends

Total processing/network services revenue from all types of companies reached $18.7 billion in 1986, a 14% increase over 1985. User expenditures reached $18.3 billion in 1986. The significant difference between vendor revenues and user expenditures is caused by double counting due to value-added reselling.

User expenditures for processing/network services are expected to increase 14% in 1987 to $20.9 billion and an average of 13% per year for the next five years, reaching $38.2 billion in 1992 (see Exhibit II-3).

EXHIBIT II-3

INFORMATION SERVICES USER EXPENDITURES BY DELIVERY MODES FOR 1986, 1987, AND 1992

Processing/Network Services: 18.3 20.9 38.2

Software Products: 16.2 19.9 52.2

Professional Services: 12.3 14.7 33.9

Turnkey Systems: 7.8 8.6 13.3

X-axis: 0 10 20 30 40 50 60

User Expenditures ($ Billions)

Legend:
- 1986
- 1987
- 1992
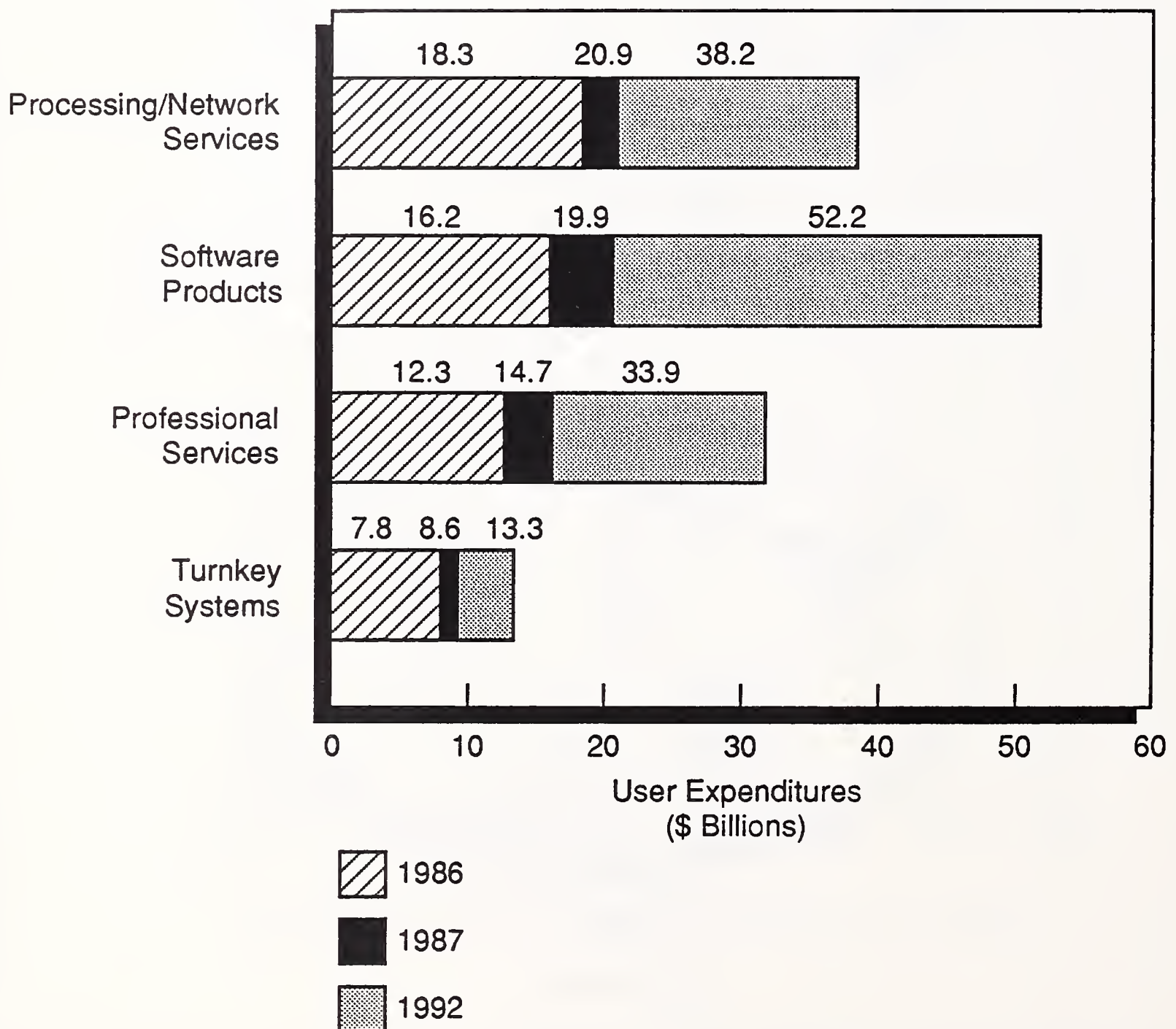
In the early stages of the information services industry, processing/ network services grew rapidly and developed into a large and profitable business. Although growth in processing/network services has moderated due to the trend toward more in-house processing, opportunities are increasing in the areas of electronic data interchange (EDI) and value-added networks.

Currently, the software products market is growing faster than all other information services delivery modes. Total software products revenue from all types of companies increased to $15.2 billion in 1986, a 23% increase over 1985. User expenditures increased to $16.2 billion in 1986.

User expenditures for software products are forecasted to grow 23% in 1987 to $19.9 billion. User expenditures are then expected to grow at an average annual rate of 21% during the next five years, reaching $52.2 billion in 1992.

The fastest growing application market is industry-specific software, such as demand deposit accounting in banking or MRP II in manufacturing. In the systems software market, the trend is toward relational structured data base management systems and tools fronting these DBMSs such as fourth generation languages, screen handlers, and forms generators.

The professional services market is beginning to expand. Vendors are leveraging their capabilities in systems design, software development, and other areas to upgrade, maintain, or operate existing systems; integrate different hardware and software into a cohesive, coherent environment (system integration); and assist end users in implementing new systems.

Total professional services revenue from all types of companies was $12.3 billion in 1986, a 16% increase over 1985. User expenditures totalled $12.3 billion in 1986. INPUT forecasts user expenditures for professional services will reach $33.9 billion by 1992, with annual growth during 1987-1992 averaging 18%.

Software development will continue to be the largest segment of both the commercial professional services market and the federal professional services market over the next five years.

The federal professional services segment, hard hit by the Gramm-Rudman-Hollings Act, will grow most in the areas of systems integration services and programming and analysis services. In addition to these service modes, the commercial professional services segment will grow from education and training services.

Success in the professional services delivery mode depends on the vendor's ability to develop expertise and specialization in specific vertical markets and in applications for those markets.

Growth in the turnkey systems market has fluctuated and has, so far, been limited. The best growth has been primarily in vertical markets such as CAD/CAM/CAE systems.

Total turnkey systems revenue from all types of companies was $7.9 billion in 1986, an 11% increase over 1985. User expenditures rose to $7.8 billion in 1986.

INPUT predicts that user expenditures for turnkey systems will reach $13.3 billion by 1992. The 1987 expenditure level is estimated at $8.6 billion; average annual growth during the interim period is forecasted at 9%.

The turnkey systems market is a tough one, characterized by erratic growth and an erosion of market share. One factor is that hardware vendors are not only competing with their OEMs and VARs for hardware sales, but they are also now providing systems "solutions."

C

Public Information Services Vendors Analysis

INPUT's sample of public companies includes information services companies only, as opposed to other types of companies (e.g., accounting, publishing or manufacturing) that also provide information services. In order to be included in the sample, these companies must also generate most of their revenue from one delivery mode, such as software products, so that the sample can be used to determine the performance of companies in each of the four delivery modes. Due to these requirements, INPUT's sample does not include all of the largest information service providers. See sections V - VIII of this report for companies included in the sample.

The comparison of the quarter growth rates (e.g., 1986 growth in fourth quarter compared to 1985 growth in fourth quarter for a given service sector) enables the rate of growth and recovery, or lack thereof, to be clearly observed (see Exhibit II-4).

Revenue growth for INPUT's sample of public information services companies was 18% in 1986, which was higher than the 14% rate demonstrated in 1985, but lower than previous years' growth rates.

The improvement was due to continued steady growth in the processing/ network services and professional services sectors combined with improved growth for the software products and turnkey systems sectors.

The net income situation improved substantially for public information services vendors in 1986. Income, which had declined 7% in 1985, grew 36% in 1986. Again, the improvement was primarily due to the results of software products vendors and turnkey systems vendors.

EXHIBIT II-4

PUBLIC INFORMATION SERVICES VENDOR PERFORMANCE
1983 - 1986
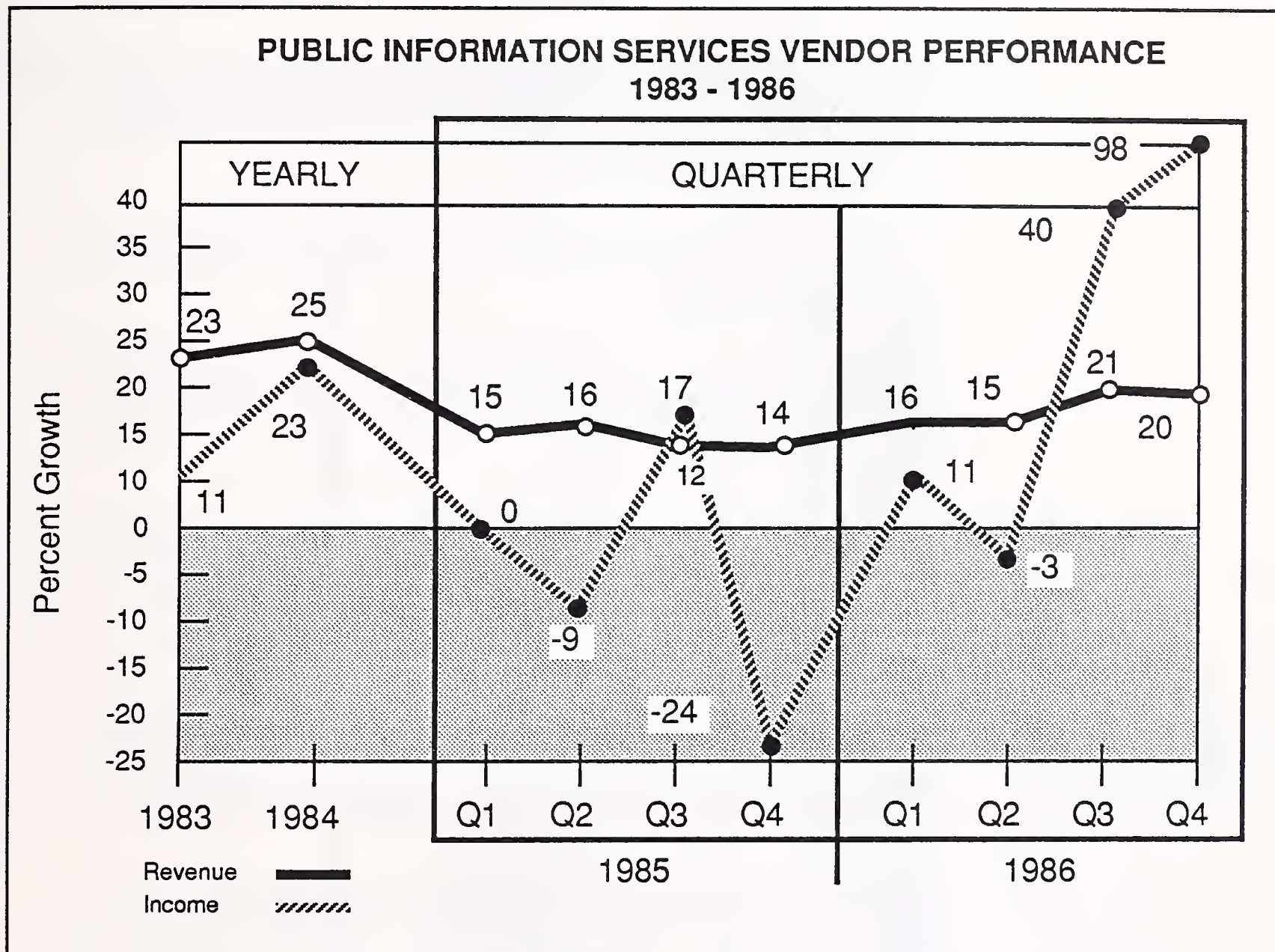
The processing/network services sector finished 1986 with an excellent fourth quarter. Revenue growth was 21%; growth in income for the quarter was 54%.

- GTECH and CUC International were major contributors to the revenue increase, while Anacomp, DST Systems, as well as GTECH contributed most to the increase in net income.

The professional services sector maintained approximately the same revenue growth rate for six consecutive quarters through fourth quarter 1986. Income growth in 1986 returned to the 1984 rate of 20% after coming to a standstill in 1985. (The 1985 annual income growth rate was 0%, after income dropped 27% during fourth quarter.)

- The 1986 turnaround in the net income situation for professional services vendors resulted from improvements made by Advanced

Systems, BDM International, Bolt Beranek & Newman, Dynamics Research, Intermetrics, Scientific Systems Services, and SofTech.

Revenue for the software products sector grew 26% in 1986, a significant improvement over the 1985 growth rate of 14%. Even more notable was the improvement in net income growth. The 1986 income growth rate was 40%; the 1985 rate was 10%.

* Software companies that improved most in both revenue and net income were Ashton-Tate, Autodesk, Computer Associates, Microsoft, Oracle and Pansophic.

Revenue for the turnkey systems sector grew 11% in 1986, compared to the 1985 rate of 7%; however, growth is still below previous years' levels. Income growth for the sector exceeded 500% in 1986, after decreasing every quarter in 1985.

* The turnaround in the net income situation for this sector was due mostly to Computervision, which sustained heavy losses each quarter of 1985 and became profitable the last two quarters of 1986.

D

Commercial Versus Federal Information Services Markets

In 1986, federal government expenditures for information services reached $4.8 billion. These expenditures are expected to grow 11% in 1987 to $5.3 billion and an average of 12% during the next five years, reaching $9.6 billion in 1992 (see Exhibit II-5).

In comparison, user expenditures made by the commercial sector for information services reached $49.8 billion in 1986 and are expected to grow 18% to $58.7 billion in 1987. Commercial user expenditures are expected to total $128.1 billion by 1992, growing at an average rate of 17% per year during the next five years.

Of all service delivery modes, professional services represents the largest segment of federal expenditures, 67% or $3.2 billion in 1986 (see Exhibit II-6). Federal expenditures for professional services are expected to grow 12% per year over the next five years from approximately $3.5 billion in 1987 to $6.3 billion in 1992 (see Exhibit II-7). Professional services procured by the federal government are described further in section VII of this report.

As in the commercial sector, the fastest growing service mode for federal users is software products. Federal expenditures are forecasted to grow at an average rate of 17% during the next five years; commercial user expenditures are forecasted to grow 21% (see Exhibit II-7 and II-8).

EXHIBIT II-5

FEDERAL GOVERNMENT AND COMMERCIAL
INFORMATION SERVICES USER EXPENDITURES, 1987-1992

Overall
AAGR = 17%

AAGR
17%

64.0

58.7

AAGR
12%

5.3

137.7

128.1

9.6

User Expenditures
($ Billions)

150

125

100

75

50

25

0

1987

1992

Federal
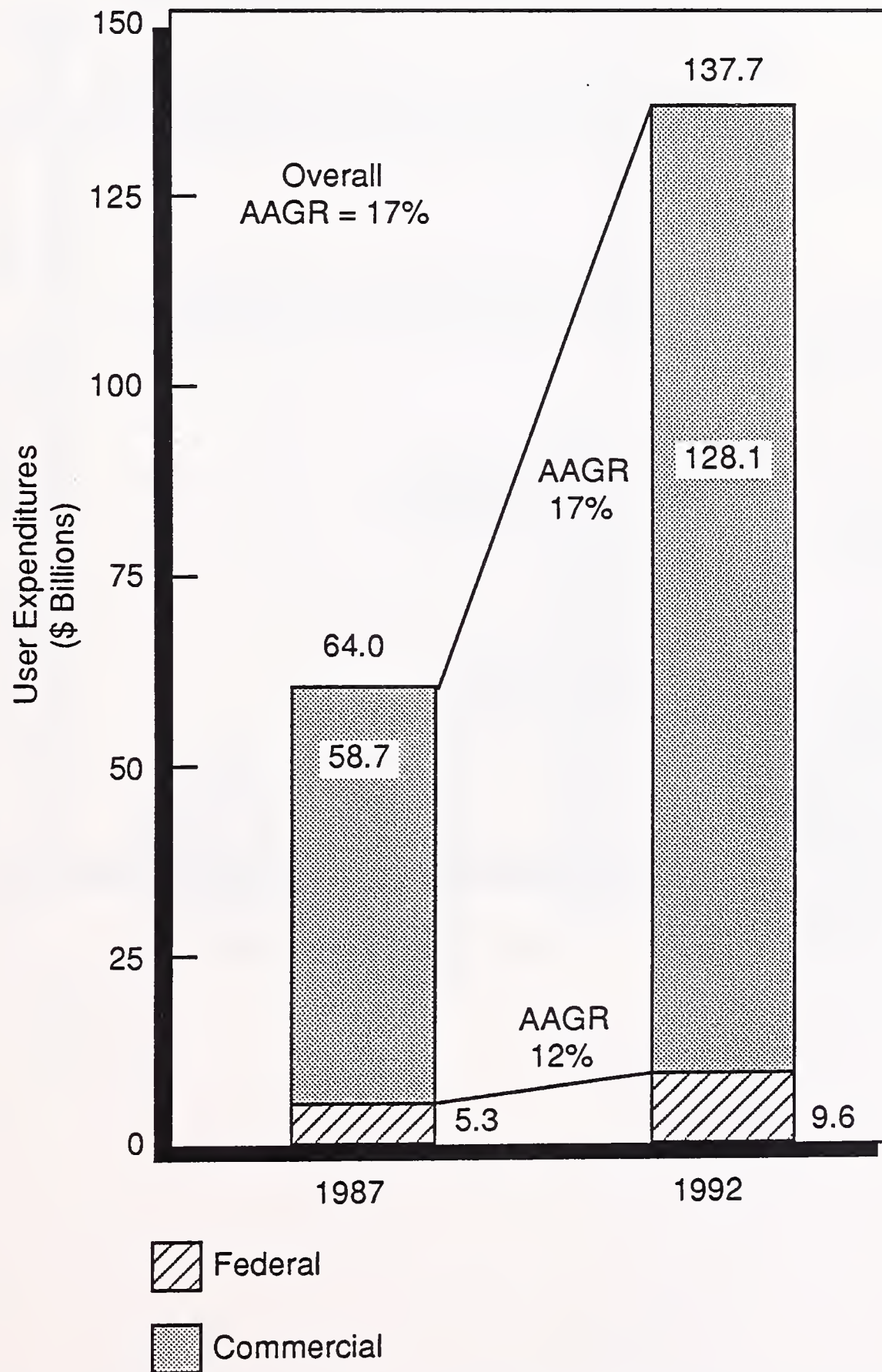
Commercial

EXHIBIT II-6

FEDERAL GOVERNMENT AND COMMERCIAL INFORMATION SERVICES USER EXPENDITURES BY DELIVERY MODE, 1986

1986 User Expenditures
($ Billions)

Processing/Network Services — Commercial: 17.8, Federal: 0.5
Software Products — Commercial: 15.7, Federal: 0.5
Professional Services — Commercial: 9.1, Federal: 3.2
Turnkey Systems — Commercial: 7.2, Federal: 0.6

Legend:
⧄ Commercial
▦ Federal
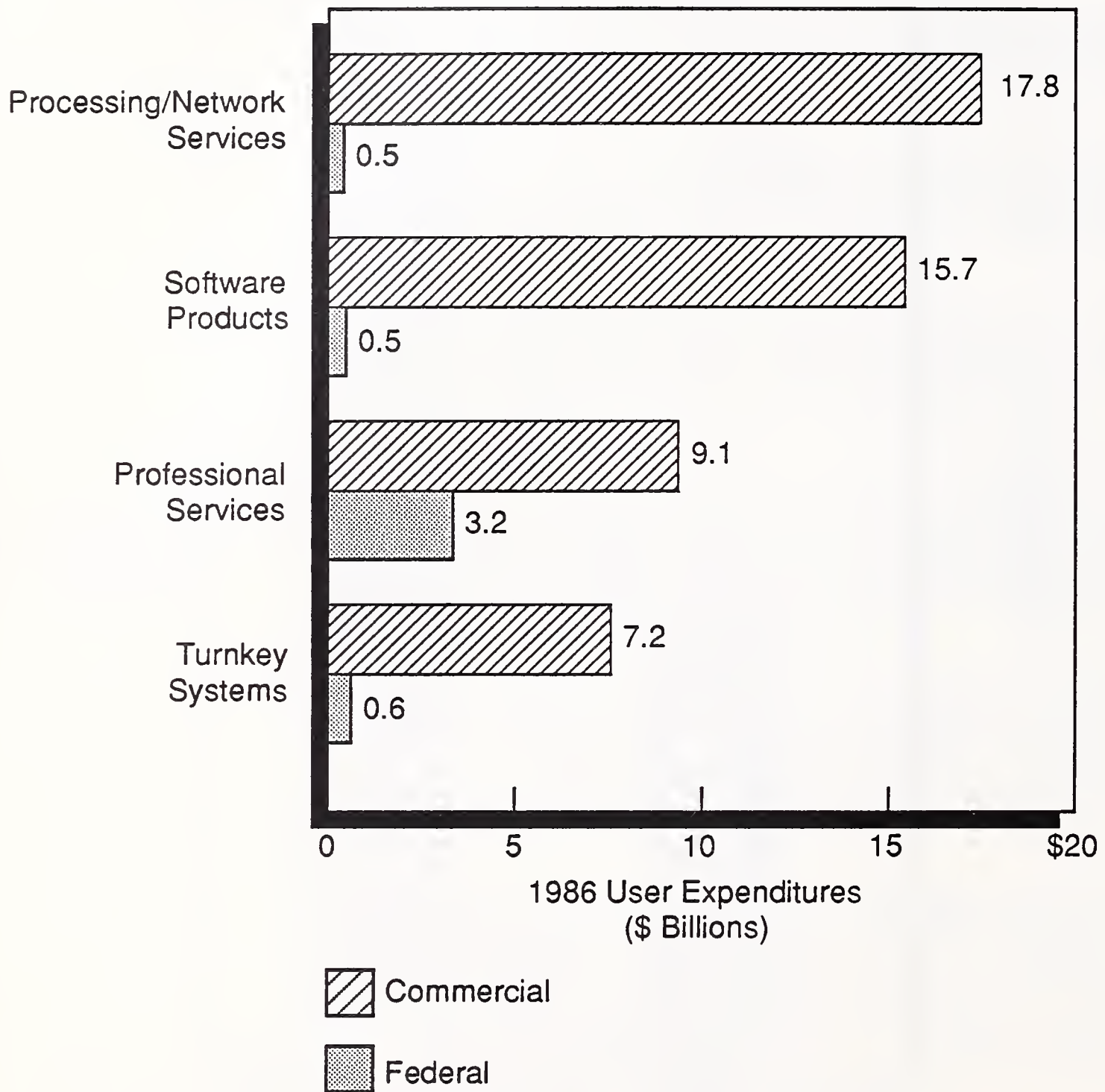
EXHIBIT II-7

FEDERAL GOVERNMENT INFORMATION SERVICES
USER EXPENDITURES GROWTH, 1987-1992

Processing Services: 1987 = 0.6, 1992 = 0.7
Software Products: 1987 = 0.6, 1992 = 1.3
Professional Services: 1987 = 3.5, 1992 = 6.3
Turnkey Systems: 1987 = 0.7, 1992 = 1.4

User Expenditures ($ Billions)

Legend:
1987
1992
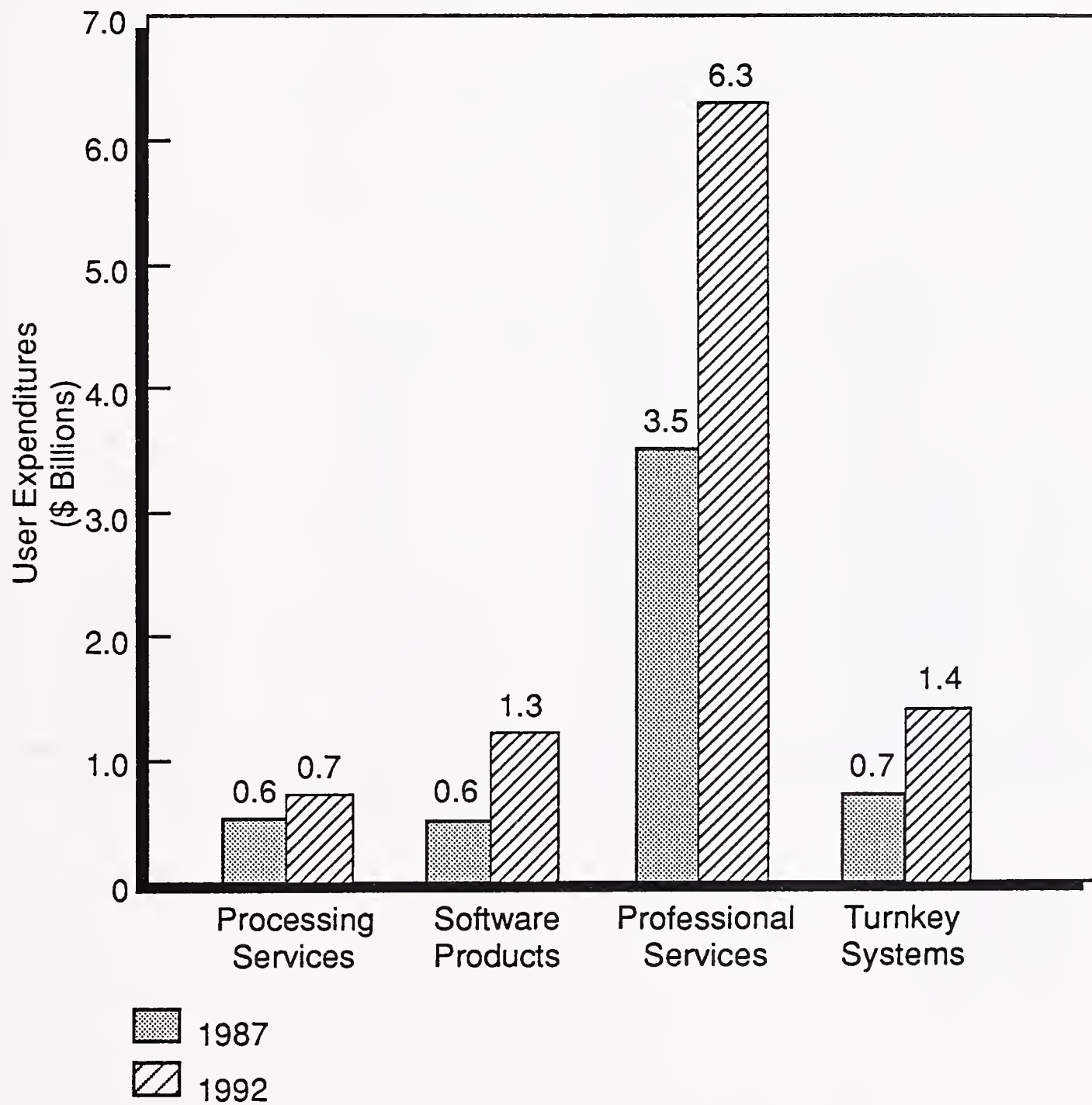
EXHIBIT II-8

COMMERCIAL INFORMATION SERVICES
USER EXPENDITURES GROWTH, 1987-1992

Bar chart showing User Expenditures ($ Billions) for 1987 and 1992:

Category	1987	1992
Processing Services	20.3	37.5
Software Products	19.3	51.0
Professional Services	11.2	27.7
Turnkey Systems	8.0	12.0

CAIR
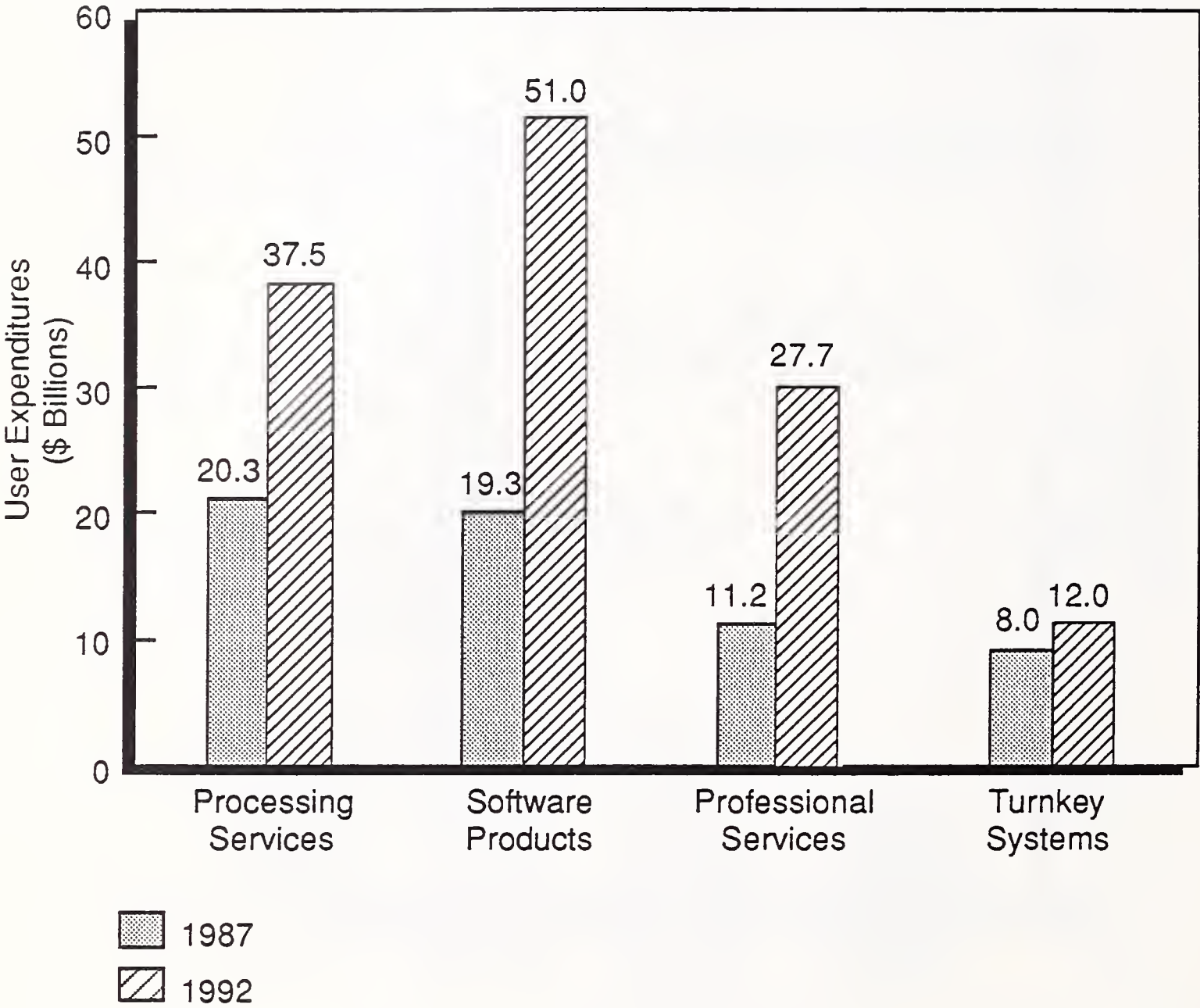
At $335 million, application software product expenditures represented approximately 68% of software products purchased by the federal government in 1986. These expenditures are expected to grow 14% during 1987-1992. Systems software product expenditures purchased by the federal government were $158 million in 1986 and are expected to grow 22% per year during the same five-year period.

In comparison, commercial expenditures for application software products totalled $8.2 billion in 1986, representing 52% of all commercial software product expenditures that year. These expenditures are projected to grow 17% per year during 1987-1992. Systems software expenditures by the commercial sector reached $7.5 billion in 1986 and will grow 25% during the next five years.

The high growth expected for systems software products is largely due to growth in networks projected development for both the federal government and commercial sector during the next five years.

18

Information Services Marketplace

III
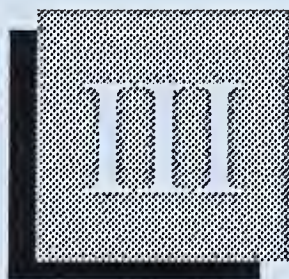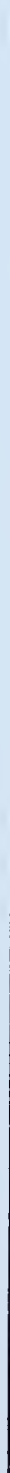
Information Services Marketplace

A

Overview

Over 7,500 companies comprised the information services industry in 1986, and generated $54 billion in U.S. noncaptive revenue from computer software and services (see Exhibit III-1). The number of companies increased moderately (3%) over the number in 1985, despite the high level of merger/acquisition activity that occurred throughout the industry.

Processing services companies continue to lead the information services industry sectors in U.S. noncaptive revenue ($21.3 billion). However, growth for the sector (13%) is below average for the information services industry as a whole (16%) due to increased use of microcomputers as well as a trend toward more in-house processing utilizing larger systems.

Software products companies represent the second largest sector, reaching $14.8 billion in U.S. noncaptive information services revenue in 1986. The group grew at the fastest rate (24%) of all information services sectors in 1986. Much opportunity lies in the areas of industry-specific applications, departmental software, DBMSs, and systems software tools.

Professional services companies represented $11.1 billion in U.S. noncaptive information services revenue in 1986 and grew at 20%. Systems integration is the fastest growing segment of both the commercial professional services market and the federal government professional services market.

Turnkey systems vendors, representing the smallest information sector, grew at only 8% in 1986, resulting in revenue of $6.9 billion for the group in 1986. Turnkey systems vendors are growing in the software products area, as hardware vendors take away market share by providing systems "solutions."

EXHIBIT III-1

KEY INFORMATION SERVICES INDUSTRY STATISTICS

TYPE OF COMPANY	NUMBER OF COMPANIES	NONCAPTIVE U.S. REVENUE		
		1985 ($ Billions)	1986 ($ Billions)	GROWTH (Percent)
Processing Services	2,110	18.9	21.3	13
Software Products	2,705	11.9	14.8	24
Professional Services	1,555	9.2	11.1	20
Turnkey Systems	1,162	6.4	6.9	8
Total All Types	7,532	46.4	54.0 *	16

* Total does not equal sum of four delivery modes due to rounding error.

B

Revenue Distribution by Mode of Service

By mode of service, regardless of the type of company offering the service, processing services continued to hold the largest share (35%) of total information services (see Exhibit III-2). Software products increased slightly in market share from 27% to 28% in 1986, taking that portion from turnkey systems.

C

Revenue and Growth Rates by Type and Size of Company

The distribution of information services revenue between different sizes of vendors remained unchanged between 1985 and 1986. In 1986, the 372 large companies (greater than $10 million in U.S. noncaptive information services revenue) represented approximately 60% of the total information services market, as compared to the 344 large companies representing approximately 60% in 1985. Exhibit III-3 depicts market growth by size and type of company.

EXHIBIT III-2

REVENUE DISTRIBUTION BY MODE OF SERVICE

1985
$46.4 Billion

Turnkey Systems 15%

Professional Services 23%

Processing/ Network Services 35%

Software Products 27%

1986
$54.0 Billion

Turnkey Systems 14%

Professional Services 23%

Processing/ Network Services 35%

Software Products 28%
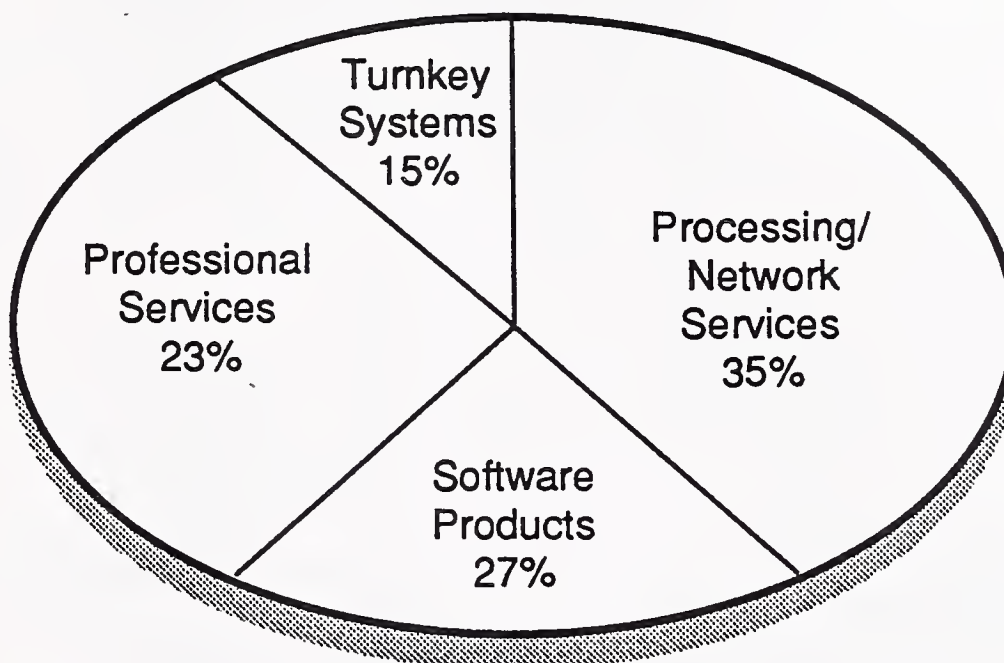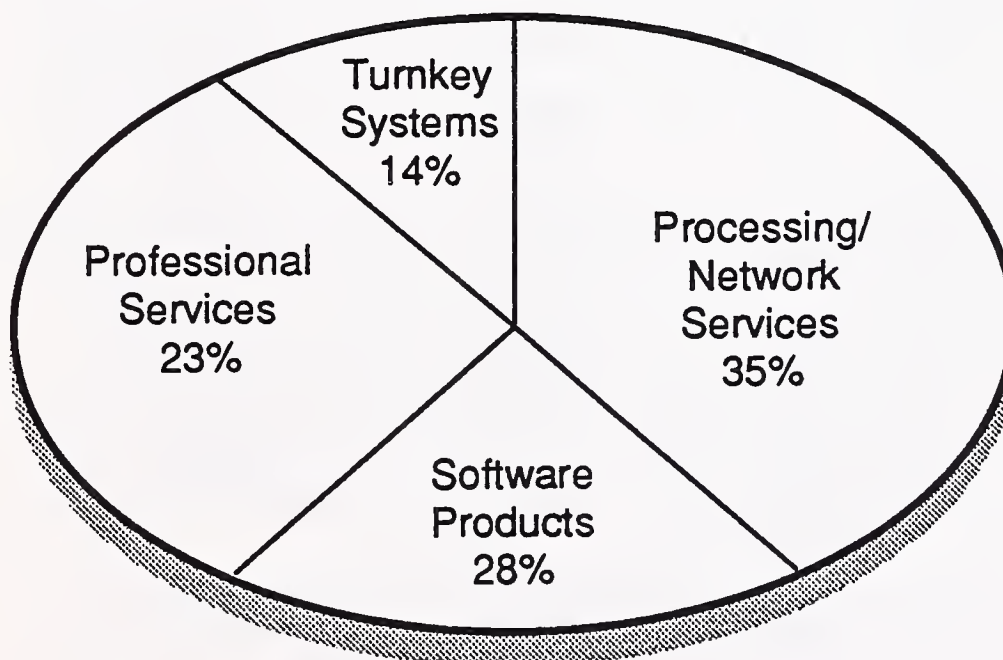
EXHIBIT III-3

REVENUE AND GROWTH RATE OF INFORMATION SERVICES BY TYPE AND SIZE OF COMPANY

TYPE OF COMPANY/ SIZE ($ Millions)	INFORMATION SERVICES REVENUE ($ Millions)		GROWTH 1985-1986 (Percent)
	1985	1986	
Processing Services			
<$10	6,542	7,607	16
>$10	12,325	13,709	11
All Processing	18,867	21,316	13
Software Products			
<$10	4,414	5,790	31
>$10	7,531	8,994	19
All Software	11,944	14,783	24
Professional Services			
<$10	3,648	4,237	16
>$10	5,592	6,847	22
All Professional	9,240	11,084	20
Turnkey Systems			
<$10	3,825	4,110	7
>$10	2,542	2,742	8
All Tunkey	6,367	6,853	8
All Types			
<$10	18,426	21,745	18
>$10	27,992	32,292	15
All Types	46,418	54,037	16

D

Revenue and Growth Rate by Mode of Service and Type of Company

The change that occurred in product mix between 1985 and 1986 for the four types of companies is outlined below.

- Processing/network services companies experienced healthy growth (14%) in processing/network services revenue in 1986. This growth was higher than in 1985 (10%), when processing/network services companies grew more from other delivery modes, including software products, professional services, and turnkey systems.

- The earlier slow down in processing/network services growth was due to the trend toward more in-house processing that has occurred during recent years. (Note that INPUT includes only external processing services in its processing/network services market.) One reason for the 1986 increase is that a growing service, Electronic Data Interchange (EDI), has provided new opportunities in the processing/network services market.

- Growth in professional services was much lower for processing/network services vendors in 1986 (8%) than in 1985 (20%). Growth in software products and turnkey systems for these vendors was moderate in 1986 (8% and 10% respectively), although lower for both than in 1985.

Software companies had major revenue increases from software products and turnkey systems in 1986. Growth in turnkey systems demonstrates the opportunity for these vendors to leverage industry specific applications. Growth in professional services revenue dropped from 22% in 1985 to 17% in 1986. Growth in processing services revenues dropped from 10% in 1985 to 5% in 1986.

Professional services vendors achieved strong growth in processing services (21%), software products (23%), and turnkey systems (59%). These growth rates were all above 1985 growth rates. In the area of professional services revenue, this group grew at approximately the same rate (18%) as in 1985 (19%). Expertise in all four delivery modes enables professional services vendors to provide their customers with exactly what they need.

Turnkey systems vendors continued to grow in processing services in 1986 at an even higher rate (15%) than in 1985 (10%). Growth in revenues from software products and turnkey systems fell significantly from 1985 levels. Revenues from professional services actually fell 3% from the 1985 level.

Exhibit III-4 shows revenue and growth rates by delivery modes for these companies.

EXHIBIT III-4

REVENUE AND GROWTH RATES BY MODE OF SERVICE

TYPE OF COMPANY	MODE OF SERVICE (Revenue in $ Millions)				TOTAL BY COMPANY
	Processing Services	Software Products	Professional Services	Turnkey Systems	
Processing Services					
1985 Revenue	15,343	1,034	1,519	971	18,867
1986 Revenue	17,491	1,117	1,641	1,068	21,316
Growth Rate (Percent)	14	8	8	10	13
Software Products					
1985 Revenue	201	10,251	1,278	214	11,944
1986 Revenue	211	12,814	1,495	263	14,783
Growth Rate (Percent)	5	25	17	23	24
Professional Services					
1985 Revenue	636	798	7,508	298	9,240
1986 Revenue	770	982	8,959	474	11,084
Growth Rate (Percent)	21	23	18	59	20
Turnkey Systems					
1985 Revenue	210	228	307	5,622	6,367
1986 Revenue	242	242	298	6,072	6,853
Growth Rate (Percent)	15	6	-3	8	8
Total by Mode					
1985 Revenue	16,390	12,311	10,612	7,105	46,418
1986 Revenue	18,713	15,154	12,293	7,877	54,037
Growth Rate (Percent)	14	23	16	11	16

IV

Public Company Analysis

IV

Public Company Analysis

A

Sample of Public Companies by Service Mode

INPUT's sample of public information services vendors includes 129 companies:

- Processing services vendors - 40.

- Professional services vendors - 26.

- Software products vendors - 40.

- Turnkey systems vendors - 23.

B

Revenue and Net Income Performance, 1983-1986

As a group, the public information services companies that INPUT tracked performed well in 1986. Revenue growth averaged 18%, which was above 1985 growth although still below previous years' growth. In contrast to the slow down in revenue growth that occurred during the last two quarters of 1985, growth improved during the last two quarters of 1986 (see Exhibit IV-1).

Overall, net income grew an average of 36% in 1986, after decreasing 7% in 1985. The last two quarters, especially, reflected the turnaround in the net income situation (see Exhibit IV-2).

- The growth in net income for turnkey systems vendors contributed to growth for the information services market as a whole. This growth came after heavy declines each quarter in 1985.

- Growth from software products vendors and professional services vendors also contributed to the overall market growth. These groups had experienced little to no growth in 1985.

- Net income for processing/network services vendors grew only 7%, which followed a high growth year in 1985.

EXHIBIT IV-1

PUBLIC INFORMATION SERVICES VENDOR
REVENUE GROWTH, 1983-1986
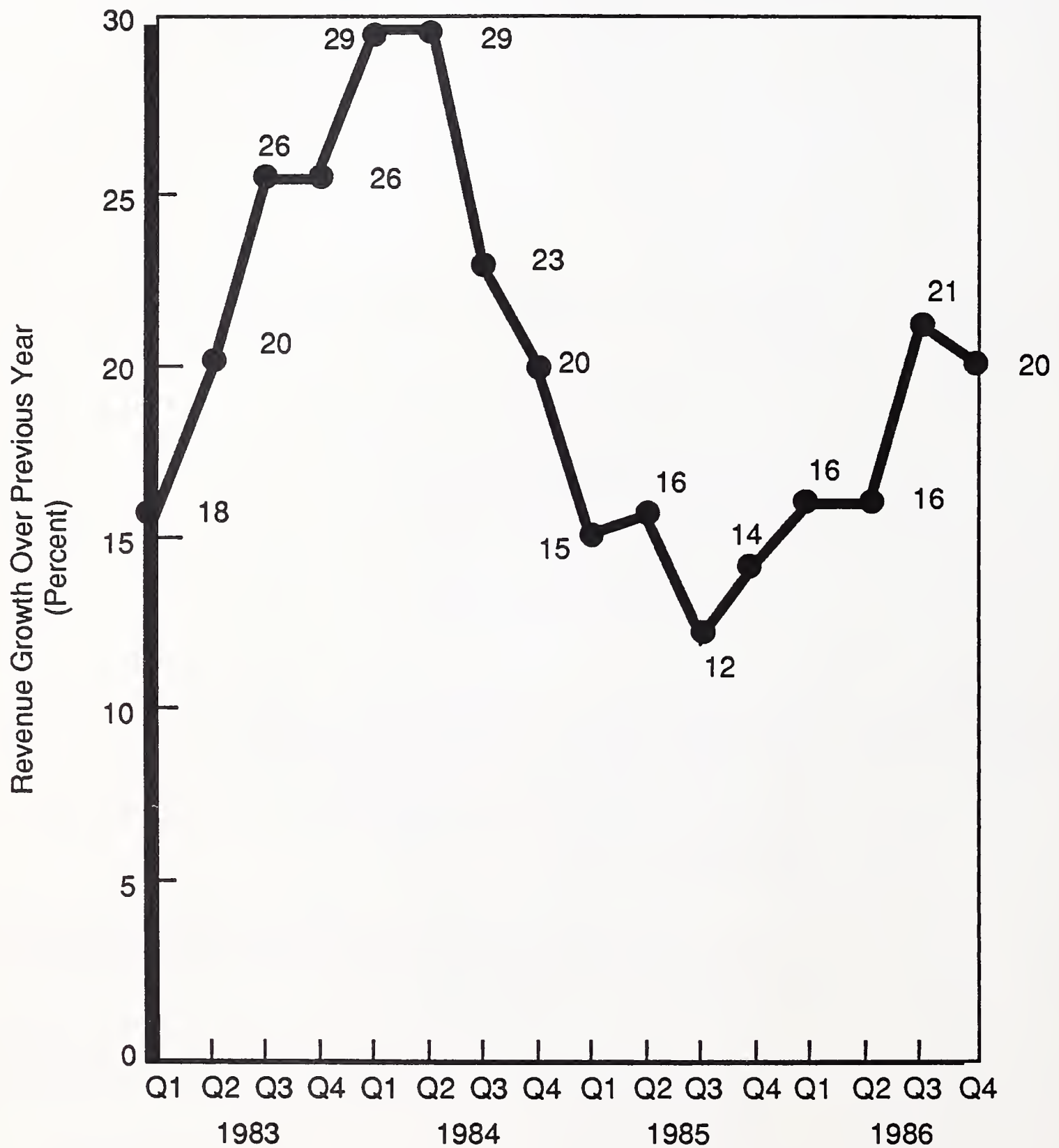
EXHIBIT IV-2

PUBLIC INFORMATION SERVICES VENDOR
NET INCOME GROWTH, 1983-1986
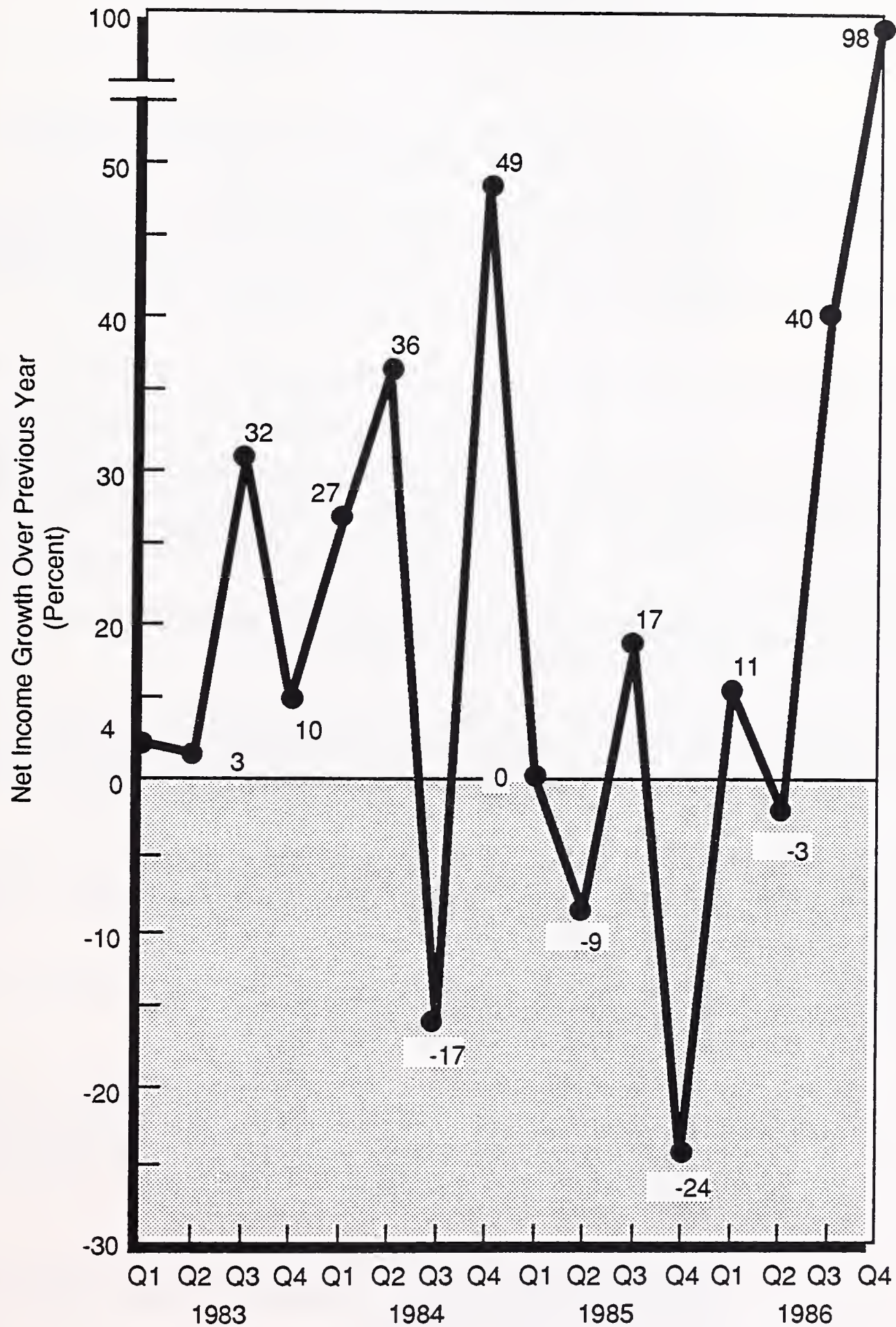
C

Case Study Analysis of Selected Success Stories

This section analyzes public information services firms which have demonstrated above average revenue and net income growth for their sector in 1986. To qualify, these companies must have had positive net income during 1985. Revenue and net income figures have been calendarized for comparison reasons.

1. Processing Services

Most of the successful public processing/network services firms, such as those described below, specialize in specific vertical markets.

With average revenue growth rates above 50% and average net income growth rates above 20%, these companies demonstrate that effective strategies make the processing/network services market a viable opportunity.

a. CCX Network, Inc. (301 Industrial Blvd., Conway, AR 72032)

CCX Network provides data processing services for the targeted marketing industry. Services include a direct marketing network, which allows users to access and exchange database information via PCs. Clients include list owners, list brokers, and list managers, as well as mailers, marketing consultants, advertising agencies, and service bureaus.

CCX Network's revenues increased 51% to $23.9 million in 1986. Net income rose 33% to $1.9 million.

During 1986, CCX Network purchased BSA, Inc. (Ocean, NJ) and Southwark Computer Services Ltd. (London, England). BSA provides hardware and software systems for catalog merchandise fulfillment. Southwark is a direct marketing service bureau in the U.K.

Also in 1986, the company formed service agreements with the United States Postal Service and Standard Rate & Data Service, Inc.; these agreements will strengthen its market position.

b. CCC Information Services, Inc. (640 North LaSalle Street, Chicago, IL 60610)

CCC Information Services, previously Certified Collateral, provides computerized vehicle valuation data and claims management information services to automobile insurance companies. The company assists claims adjusters in settling claims for stolen or destroyed automobiles by providing current market valuations for the lost vehicles.

CCC Information Services' 1986 revenue was $13.8 million, an increase of 90% over 1985. Net income reached $2.2 million, which was a 43% increase over the previous year.

The company's aggressive growth included the expansion of services into nine additional states as well as into Canada.

CCC Information Services' customer base for vehicle valuations includes 1,100 offices of more than 100 automobile insurers. The company's national dealer network includes 2,500 automobile dealerships, whose inventories form the foundation of a comprehensive computerized automotive information database.

CCC Information Services acquired the computer facilities of Gibson Information Systems Inc. (GIS). GIS had previously assisted CCC in the development of on-line interactive information applications and provided a substantial portion of data processing resources on a timesharing basis.

The company plans to diversify by introducing new products as well as by selling existing products to new markets.

c. CUC International, Inc. (707 Summer St., P.O. Box 10049, Stamford, CT 06904-2049)

CUC International, formerly Comp-U-Card International, was originally established to sell merchandise to home-computer users via an electronic catalog.

The company has acquired four companies in the last two years and now provides services for other vertical markets, such as insurance, travel services, legal services, and credit card protection.

CUC International generated $141.8 million in revenue in 1986, which was 82% above 1985 revenue. Net income was $8.5 million, representing an 89% increase over 1985 results.

CUC International's strategy is to be marketing-oriented, using only the level of technology required to meet its needs. When it became apparent that personal computer users were not enough to support its electronic home shopping service, the company began taking orders by phone. The company invested in a DEC VAX cluster, with the intention of expanding the system when the need arises. As the use of personal computers for home shopping increases, CUC International will be set up to handle the business.

As of May 1987, 2.7 million Visa and Mastercard holders were reportedly shopping through CUC International.

d. GTECH Corporation (101 Dyer Street, Providence, RI 02903)

GTECH provides computer-based on-line lottery networks for government-sponsored or licensed lotteries in the U.S., Canada, Australia, and Singapore.

GTECH's revenue increased 75% in 1986 to $131.5 million. Net income increased 21% to $6.3 million.

GTECH plans to gain new business through continued industry growth and expansion, and has invested heavily in R&D in order to enhance existing business through new technology.

During fiscal 1986, GTECH introduced the player-operated sales terminal (POST), utilized in the Oregon network, and a new retailer-operated terminal, serving the California, Rhode Island and Singapore networks.

GTECH plans to maintain its leadership position through its advanced telecommunications systems and other products for both gaming and non-gaming institutions.

2. Software Products

Successful software products companies are developing and marketing systems that meet user needs in growing markets. For example, these companies are providing systems for desktop publishing, local area networks and telecommunications, as well as integrated and multi-user systems. Other growth areas are DBMS, data center management tools and executive information systems (EIS).

These companies are growing through planned acquisitions that fit their overall strategies, in addition to increasing customer bases through new product development and product enhancements.
The software companies described below demonstrated annual growth rates above 80% and annual net income growth rates of at least 120% in 1986.

a. Adobe Systems Inc. (1870 Embarcadero Road, Palo Alto, CA 94303)

Adobe Systems provides systems software products used in laser printers, typesetters and other raster output devices to print integrated text and graphics.

Adobe Systems' revenue grew 248%, reaching $16.1 million in 1986. Net income grew 620% to $3.6 million.

Adobe Systems ties its success to the acceptance of desktop publishing, which the company attributes mainly to Apple Computer's success in selling its Macintosh computer along with its Laser Writer and Laser Writer Plus printers.

Adobe Systems' strategy is to provide software for the rapidly growing desktop publishing market in three key areas:

- The POSTSCRIPT® language interpreter, the company's principle product, executes page descriptions generated from applications programs that support the POSTSCRIPT® language to produce documents containing multiple typefaces and graphics.Currently, seventeen different printers incorporating POSTSCRIPT® interpreters are offered by thirteen companies. Additionally the language is supported by 180 software firms and is reportedly becoming a de facto standard for controlling laser printers.

- The company also develops typefaces used with laser printers. Because of the large POSTSCRIPT® installed base and because expanding the library of typefaces is technically difficult and time-consuming, the barrier to entry has increased for companies with competitive language interpreters.

- Last year, Adobe developed cheaper and faster printer controller designs and a variety of printer controller emulators for use with POST-SCRIPT® interpreters in customers' machines.

b. Duquesne Systems Inc. (Two Allegheny Center, Pittsburgh, PA 15212)

Duquesne Systems provides productivity enhancement system software. The company's standardized software products enable users of medium and large IBM mainframes to manage and operate their data processing centers and terminal networks. The company's nineteen products are organized into three product groups: the Performance Group, the Operations Productivity Group, and the Network and Terminal Group.

Revenue grew 128% for Duquesne in 1986, increasing to $28.8 million. Net income rose 158% to $6.0 million.

In 1986, Duquesne acquired Single Image Software, which contributed approximately $8.0 million in revenue during the year.

Duquesne also acquired the product SNA to X.25 (STX), which is considered by the company to be a major breakthrough in communications, providing connectivity between IBM's systems network architecture (SNA) and public and private X.25 data networks.
In addition to the acquisitions, the company attributes its growth to

market acceptance of its Terminal Productivity Executive (TPX) product, as well as its DASDMON product.

- TPX makes it possible for display terminal users to concurrently access multiple mainframe applications.

- DASDMON helps users pinpoint and correct data center performance problems.

Duquesne reports that more than 7,000 copies of its various products are installed in over 2,500 data processing centers worldwide. The company sells directly from six regional sales offices located in North America and through a combination of wholly-owned European subsidiaries and fifteen independent foreign marketing organizations.

c. Innovative Software, Inc. (9875 Widmer Road, Lenexa, KS 66215)

Innovative Software provides microcomputer software for business applications and related support services. The company's principal product is the Smart Software System, a modularly designed set of business applications—word processor, database manager, and spreadsheet with graphics—that can be purchased separately or as an integrated system.

Innovative Software's revenue reached $15.1 million, growing 82% in 1986. Net income increased 158% reaching $0.7 million.

Innovative's strategy is to bridge the gap between single-user DOS, local area networks, and UNIX environments, making it possible to shift data between these environments, as well as between word processing, data bases, spreadsheets, graphics, and telecommunications.

During 1986, three major expansions were made to the Smart product line:

- Version 3.0 of the Smart System was introduced, which includes support for extended memory hardware, multi-level password protection, improved project processing, and the ability to access DOS commands without exiting the Smart application.

- Innovative also introduced a multi-user version of Smart 3.0 for local area networks in order to capitalize on the growing office networking market.

- The third new product release of 1986 was a UNIX version of Smart. Innovative Software entered into an agreement with AT&T Information Systems for non-exclusive rights to market a co-labeled version of

Innovative's Smart Software System for the UNIX PC (AT&T 7300 and 3B1 computers).

Innovative Software sells through distributors and retailers in North America, Europe, Asia, and Australia.

d. Oracle Corporation (20 Davis Drive, Belmont, CA 94002)

Oracle provides software products used for database management, applications development, decision support, and network communications, as well as related support and consulting services. Oracle's principal product is the ORACLE relational database management system.

Oracle provides software products to many industries including the aerospace, automotive, computer manufacturing, energy, education, engineering, finance, insurance, publishing, retail, telecommunications, and transportation industries, in addition to state, local, and federal governments.

Oracle's revenue increased to $82.8 million at a rate of 155% in 1986. Net income rose to $7.8 million at an annual rate of 172%.

Oracle attributes its 1986 growth to acceptance of SQL as the industry standard language for relational database management systems, which increased market acceptance of Oracle's SQL-compatible relational database management system.

Oracle's strategy is to provide software that integrates different computers, operating systems, networks, and database management systems into a single computing and information resource.

3. Professional Services

Professional services companies look for ways to market custom software developed for a specific client as applications products for new users. Companies in this sector also modify systems originally developed for one vertical industry in order to market them to another industry when possible. Successful companies are determining future directions for their areas of expertise.

Those professional services companies described below experienced revenue growth rates of 29% or more in 1986; net income growth rates for these vendors ranged from 17% to 230% from 1985 to 1986.

a. 202 Data Systems Inc. (Glenhardie Corporate Center, 1275 Drummer Lane, Wayne, PA 19087)

202 Data Systems provides applications software and develops custom software for the nuclear power industry. The company's major customer is the Philadelphia Electric Company. In 1986, 202 Data Systems completed an enhanced version of its Critical Equipment Monitoring System (CEMS), developed to monitor the status of equipment in power plants, process control plants, and other applications.

In 1986, 202 Data Systems generated $3.8 million in revenue, which was an increase of 87% over 1985 revenue. Net income was $0.6 million, an increase of 230% over the year earlier.

The revenues from operations were derived primarily from a single, non-recurring contract. However, 202 Data Systems also received orders in 1986 from the Philadelphia Electric Company for an enhanced Permit Manager System for installation at both its Limerick and Peach Bottom Atomic Power Stations.

To adjust to the long-term cycle and the uncertainties of the nuclear power industry, 202 Data Systems plans to expand in areas beyond the CEMS family of products.

b. AGS Computers, Inc. (1139 Spruce Drive, Mountainside, NJ 07092)

AGS Computers provides systems development and consulting services, software products, and microcomputer distribution services for financial, telecommunications, computer, and government organizations.

AGS Computer's revenue reached $381.7 million in 1986, an increase of 37% over 1985. Net income rose to $8.8 million, a 17% increase over the previous year.

In 1986, AGS Computers acquired four companies that opened new market opportunities for the company's system development and consulting services group, and increased the software products revenue, tripling the revenue received from financial institutions.

- Products from one of the acquired companies, Vista Concepts, are used by banks to automate their total securities processing and trust functions.

AGS consolidated the two primary groups within the systems development and consulting services unit, forming AGS Information Services.

AGS Computers' microcomputer distribution group, MicroAmerica, acquired Canada's largest microcomputer products distributor.

The company plans to continue expanding each of its operating units. The software products unit will be introducing several new packages to the company's targeted vertical markets. One example is Vista Concepts' Global Securities Processing System, which will permit securities information transfer and accounting processing on a worldwide basis.

c. BDM International, Inc. (7915 Jones Branch Drive, McLean, VA 22102)

BDM International is a professional and technical services firm serving customers in defense, communications, logistics, energy, aerospace, transportation, manufacturing, banking and insurance, associations, and foreign government and industry.

BDM International's revenue grew at an annual rate of 29% in 1986, reaching $322.2 million. Net income increased 29% to $13.6 million.

BDM International attributes its success partially to its Individual Marketing Initiative (IMI) set in place last year. The IMI program charges all professional staff members with the responsibility of direct, individual participation in the marketing process. IMI proposals generated $76 million in contract awards in 1986, up from $33 million in 1985.

Driving the future for BDM International are Artificial Neural Systems (ANS), Advanced Cartographic Systems (ACS), and Large Scale Information System Development (LSISD).

- ANS applications include computer integrated manufacturing, signal interpretation, cryptography, and adaptive information systems. BDM expects ANS to become as much a part of military and civilian technology as microprocessors are today.

- ACS will store and display terrain and submarine surface information in three dimensions for applications in weather monitoring, aviation and other modes of transportation, command and control centers, and more.

- LSISD will be used by both government and corporations to manage information potentially available in large databases.

d. Data Architects, Inc. (245 Winter Street, Waltham, MA 02154)

Data Architects provides proprietary software products, customized software systems, and consulting services to the banking, life insurance, and telecommunications industries.

- The company's first proprietary computer software product, BESS® (Bank Electronic Support System), automates the data communications message switching and other wireroom operations for financial institutions, and processes electronic funds transfers and financial transactions for large commercial banks. The company has applied its BESS technology to customized systems projects for customers in the telecommunications industry and other non-banking institutions.

- Bank Master, another of the company's proprietary software products, is an interest rate risk analysis and financial management system for domestic and international commercial banks and savings and loan institutions.

Data Architects' revenue increased 29% to $27.1 million in 1986. Net income increased 32% to $1.6 million.

In 1986, Data Architects acquired Banking Decision Systems (BDS), a division of Ziff Communications Company for $2.2 million. BDS markets software products and timesharing services, providing decision support tools for bankers to manage their asset/liability portfolios.

Data Architects announced in early 1987 a $3 million contract signed with Southern New England Telecommunications Corporation for the development of a service order negotiation and processing system based on the software product SONAR, originally developed by Data Architects for U.S. West. Data Architects considers the resale of SONAR an important step in marketing products to the telecommunications industry.

4. Turnkey Systems

As a group, turnkey systems vendors performed poorly in 1985, but managed to turn around in 1986. However, only a handful of public turnkey systems vendors were both profitable in 1985 and continued to improve during 1986.

The following turnkey systems vendors experienced revenue growth at 15% or above as well as moderate to excellent net income growth over positive 1985 results.

a. ASK Computer Systems, Inc. (2440 W. El Camino Real, Mountain View, CA 94039)

ASK Computer Systems provides the MANMAN Information System, an integrated management information system for manufacturing companies. MANMAN runs on Hewlett-Packard and DEC minicomputers.

The company's strategy has been to create a comprehensive, integrated line of software products designed to assist management in the supervi-

sion of marketing, engineering, material and production control, quality and financial areas of a manufacturing company.

MANMAN consists of eighteen integrated products for manufacturing, decision support, and human resource functions and is available as a turnkey system, a licensed application software product, or through ASKNET remote processing services.

ASK Computer Systems' revenue increased to $85.7 million in 1986, a growth rate of 19% over 1985. Net income improved 7% during the year, reaching $7.1 million.

ASK markets MANMAN directly from its thirty-six offices located in the U.S., Canada, Australia and Europe.

b. CompuTrac, Inc. (222 Municipal Drive, Richardson, TX 75080)

CompuTrac provides law firm management systems on Hewlett-Packard 1000 and 3000 series computers. The company recently began selling systems to the corporate community.

CompuTrac's revenue increased 27% in 1986 (fiscal year ending January, 1987), reaching $10.4 million. During the same period, net income rose 78% to approximately $2.0 million.

CompuTrac believes that research and development of new products is the key to remaining a leader in the industry. In 1986, the company introduced DARWIN (Data Retrieval With Intelligence), which stores, searches, and retrieves text-oriented information. CenDec, also introduced in 1986, is an integrating software package that provides automatic redundant storage of PC documents and files on a host minicomputer.

CompuTrac reports that one of its biggest strengths is its relationship with Hewlett-Packard. CompuTrac continues to be the only supplier of law firm software selected by Hewlett-Packard as one of its top twenty-five value-added resellers.

The company has systems installed in over 175 law firms in thirty-five states and in nearly all metropolitan areas in the U.S. and Canada.

c. Integraph Corporation (One Madison Industrial Park, Huntsville, AL 35807)

Intergraph provides interactive turnkey computer graphic systems for design, engineering, and mapping applications in business, industry and government.

In 1986, Intergraph was able to provide less expensive computing power by delivering systems based on the MicroVAX II. In addition, the company also introduced the InterPro 32C, a workstation based on the Fairchild CLIPPER microprocessor.

New software products for the workstation include applications for electronics engineering design and mechanical design and manufacturing. Other products, including a new electronic publishing package and packages for architecture and geographic information processing, will be introduced to the market in 1987.

Intergraph's revenue increased to $605.7 million in 1986, representing growth of 15%. Net income rose 4% to $70.3 million during the year.

In 1986, Intergraph took steps to control costs, which had been growing faster than revenues. Operations were streamlined by reorganizing along functional lines. The company now has separate cost centers headed by senior executives responsible for electronics, mechanical design and manufacturing, electronic publishing, mapping and energy, architecture, engineering and utilities, and hardware.

d. Reynolds and Reynolds Company (Corporate Offices, P.O. Box 1005, Dayton, OH 45401)

Reynolds provides business forms and computer services to service-oriented organizations such as automobile dealerships, hospitals, medical practices, and public accounting firms. In 1986, Reynolds developed a new interactive video product exclusively for Chrysler Motors.

Also in 1986, Reynolds acquired the Arnold Corporation, a major manufacturer of business forms, which is expected to increase the company's revenues to over $500 million. In addition, the company finalized the acquisition of Dyatron's Australian automotive computer subsidiary.

Reynolds generated $452.5 million in revenue in 1986, an increase of 37%. The company's net income reached $23.4 million, an increase of 7% for the year.

Reynolds is looking at small- and medium-sized customers for long-term growth in its business forms division, due to the increased use of personal computers and small business computers by these customers.

Regarding the Computer Systems Products and Services division, Reynolds believes that artificial intelligence, video discs, and satellite communications will substantially improve the management and profitability of auto dealers' service operations during the next five years.

Processing Services Sector Analysis

V

Processing Services Sector Analysis

A

Processing Services Market, 1986

Total processing and network services revenue from all types of companies was $18.7 billion in 1986, a 14% increase over 1985. This represents a 35% share of the information services marketplace.

INPUT predicts that growth in this sector of the industry will accelerate so that user expenditures will reach $38.2 billion by 1992. This figure compares to $18.3 billion in 1986, $20.9 billion in 1987, and represents 13% average annual growth between 1987 and 1992.

As mentioned, the significant difference between vendor revenues and user expenditures is caused by double counting due to value-added reselling.

Processing/network services vendors are now generating 18% of their revenue from nonprocessing activities (i.e., software products, professional services, and turnkey systems).

The sources of processing/network services companies' revenues in 1985 and 1986 are shown in Exhibit V-1. The part of processing/network services companies' revenues that comes from processing/network services was slightly higher (82%) than in 1985 (81%). This part of processing/network services companies' revenues had been on the decline during recent years; the slight shift upward rather than a further decrease indicates the increasing opportunities in this market.

Processing/network services revenue generated by processing/network companies grew 14% in 1986. Software products revenue and professional services revenue each grew 8%, and turnkey systems revenue grew 10%. Overall, revenue from processing/network services companies increased 13% during the year.

EXHIBIT V-1

PROCESSING/NETWORK SERVICES COMPANIES' REVENUE AND GROWTH RATES BY MODE OF SERVICE

PROCESSING SERVICES COMPANIES	REVENUE SOURCE BY MODE OF SERVICE ($ Millions)				TOTAL
	Processing Services	Software Products	Professional Services	Turnkey Systems	
1985	15,343	1,034	1,519	971	18,867
1986	17,491	1,117	1,641	1,068	21,316
Growth Rate (Percent)	14	8	8	10	13

Processing/network services revenue generated by large processing/ network services companies (those with 1986 revenue in excess of $10 million) grew 12%. Software products revenue from these large processing/network services companies grew 8%; professional services revenue grew 7% and turnkey systems revenue grew 10%.

Breakdowns for processing/network services companies with $1 - $10 million in revenue and those with less than $1 million in revenue are provided in Exhibit V-2.

Processing/network services companies were responsible for generating 94% of all processing/network services revenue (see Exhibit V-3). The remaining 6% was generated by other types of companies as follows:

- Software products companies - 1%

- Professional services companies - 4%

- Turnkey systems companies - 1%

EXHIBIT V-2

PROCESSING/NETWORK SERVICES COMPANIES' 1986 GROWTH RATES BY MODE OF SERVICE AND SIZE OF COMPANY

PROCESSING/ NETWORK SERVICES COMPANY SIZE	MODE OF SERVICE				TOTAL
	Processing/ Network Services	Software Products	Professional Services	Turnkey Systems	
>$10 Million	12	8	7	10	11
$1 - $10 Million	15	19	14	5	15
<$1 Million	<2>	<27>	2	<4>	<1>
Total	14	8	8	10	13

EXHIBIT V-3

TOTAL 1986 PROCESSING/NETWORK SERVICES MARKET BREAKDOWN BY TYPE OF COMPANY ($ Millions)

PROCESSING/ NETWORK SERVICES MARKET	TYPE OF COMPANY				TOTAL
	Processing Services	Software Products	Professional Services	Turnkey Systems	
Revenue	17,491	211	770	242	18,713
Percent	94	1	4	1	100

Growth in processing/network services revenue generated by processing/network services companies, software products companies, professional services companies, and turnkey systems companies is shown in Exhibit V-4. Breakdowns by size of company are included in the exhibit.

- Processing/network services revenue generated by software companies grew 5% in 1986.

- Processing/network services revenue from professional services companies increased 21%.

- Revenue from turnkey systems companies rose 15%.

EXHIBIT V-4

PROCESSING/NETWORK SERVICES MARKET
1986 GROWTH RATES
BY TYPE AND SIZE OF COMPANY

INFORMATION SERVICES COMPANY SIZE	TYPE OF COMPANY				TOTAL
	Processing/ Network Services	Software Products	Professional Services	Turnkey Systems	
>$10 Million	12	5	21	15	12
$1 - $10 Million	15	35	14	12	17
<$1 Million	<2>	17	16	-	<3>
Total	14	5	21	15	14

B

Electronic Data Interchange Market and Trends

One of the fastest growing areas in the information services industry is Electronic Data Interchange (EDI). Approximately 86% of all EDI revenue comes from processing/network services.

INPUT projects user expenditures for EDI services will grow from an estimated $46 million in 1986 to approximately $1.9 billion in 1992, at an average annual growth of 88%.

EDI is the electronic transfer (computer-to-computer) of standard business transaction information between organizations in a structured application. The trading partners may have different processors and data formats, in which case translation between common formats or standards is required.

Typical applications are the transfer of electronic purchase orders, invoices, bills of lading, and other documents. EDI is also used to submit health care insurance claims and to file tax forms for the Internal Revenue Service.

The benefit to using EDI for processing documents includes cost savings, fewer errors, faster response times, better customer service, enhanced control systems, distribution of fixed information services costs, and more.

C.

Value-Added Network Services Market and Trends

INPUT expects growth in the value-added network (VAN) services market to be strong for at least the next few years. User expenditures for VAN services are expected to grow from $409 million in 1986 to $1.7 billion in 1992.

Value-added network vendors such as Tymnet, Telenet, and Uninet offer on-line database services to a large number of widely dispersed end users—frequently, as many as 25,000.

Cross-industry services represent the largest share (approximately 83%) of the VAN market. Cross-industry services are generic, resource/utility services serving many different industry segments. The proportion of VAN services sold for usage is expected to decrease further over the next few years.

Despite the growth expected over the next few years, VAN services may eventually be in for a period of gradually reduced margins, unless they can leverage the data that is transmitted over the networks.

D

Public Processing/ Network Services Company Revenue and Net Income Performance

At 1986 year end, public companies in the processing/network services sector demonstrated 19% growth on a rolling three-quarters basis and 20% on a rolling two quarters basis, continuing the steady growth pattern established over several quarters (see Exhibits V-5 through V-7).

Revenue growth for 1986 was 19%, compared to the 1985 growth rate of 16% for public companies in this sector.

Net income for the processing/network services sector grew 7% in 1986. Earnings declined during the first two quarters of the year and improved during the last two quarters.

• The setback in the net income situation that occurred during the first two quarters was caused largely by write-offs by Computone and SMS. Third quarter's positive results were despite a major write-off by SEI.

Note that in 1986 INPUT added the following companies to its list of public processing/network services vendors: CUC International, Concord Computing, Certified Collateral, First Financial Management, Hale Systems, LCS Industries, SCS/Compute, and Worlco Data Systems. Computone, Fidata, Numerax, and Quotron were removed from the list due to various circumstances, including their filing for bankruptcy or being acquired. Due to these additions and omissions, the results that INPUT previously reported for 1985 have changed.

EXHIBIT V-5

PUBLIC PROCESSING/NETWORK
SERVICES VENDOR PERFORMANCE, 1983 - 1986

NOTE: Excludes Anacomp
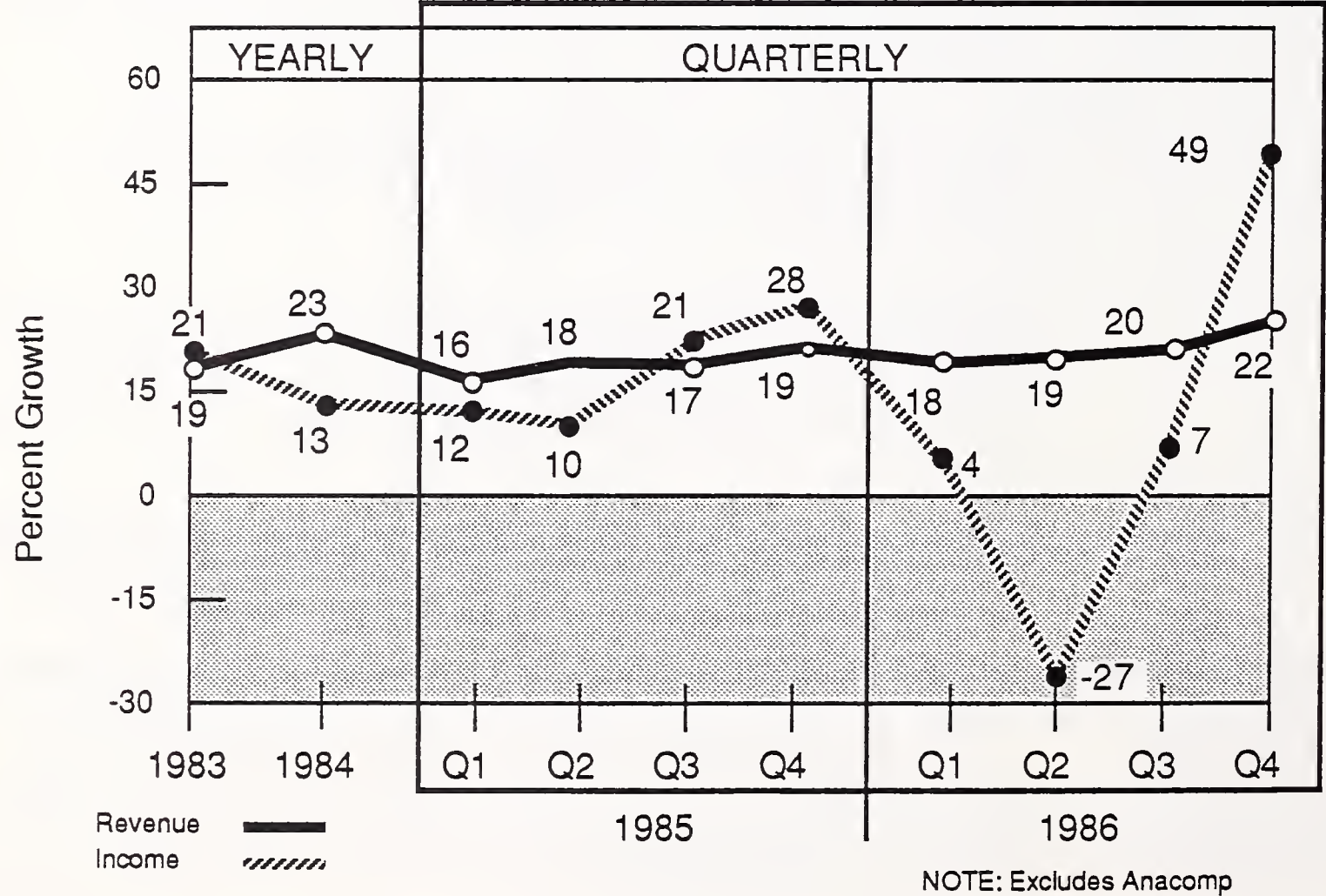
EXHIBIT V-6

REVENUES OF PUBLIC
PROCESSING/NETWORK SERVICES COMPANIES

COMPANY NAME	FISCAL YEAR END	REVENUE ($ Thousands) 1985					1986					GROWTH (Percent)		
		Q1	Q2	Q3	Q4	TOTAL	Q1	Q2	Q3	Q4	TOTAL	1986/ 1985 %(+/-)	LAST 3 ROLLING QUARTRS	LAST 2 ROLLING QUARTRS
ADP	06-30	273528	266310	270710	290258	1100806	324259	318571	321110	334162	1298102	18	18	17
ANACOMP	09-30	31782	32183	27620	28283	119868	30021	27896	22720	26998	107635	-10	-12	-11
CCX NETWORK	12-31	3319	3969	3899	4641	15828	4530	5047	5068	9221	23866	51	55	67
CERT. COLLAT.	12-31	1359	1592	1913	2404	7268	2909	3052	3631	4188	13780	90	84	81
CITIZENS FIN.	09-30	2683	2551	2494	2735	10463	2773	2662	2731	2917	11083	6	7	8
COMDATA NTWK	12-31	22400	23842	23275	22242	91759	22149	21668	21752	20984	86553	-6	-7	-6
COMPUTER LAN	12-31	36587	24770	17798	19574	98729	33498	20700	18288	20919	93405	-5	-4	5
COMNET	03-31	8800	8726	9056	8952	35534	10469	9165	10170	10188	39992	13	10	13
COMPUCARD	01-31	19281	11263	23302	24104	77950	26842	35208	37801	41908	141759	82	96	68
COMPUTER RES	08-31	2028	1789	1837	1936	7590	2559	2306	2345	2335	9545	26	26	24
COMPUTER SER	02-28	2604	2717	2766	2866	10953	3006	2813	4386	4387	14592	33	39	56
COMSHARE	06-30	14846	16010	16879	18179	65914	16920	16894	16808	17389	68011	3	0	-2
CONCORD COMP	09-30	1650	2264	2820	2840	9574	2974	3336	3664	4417	14391	50	44	43
CYCARE	12-31	9938	11611	13281	14361	49191	12800	14695	14347	15344	57186	16	13	7
DST SYSTEMS	12-31	17430	18941	18401	20170	74942	22868	24716	25715	26901	100200	34	34	36
DYATRON	12-31	9592	9574	10568	10369	40103	7719	7710	8389	9285	33103	-17	-17	-16
ENDATA	12-31	9306	9165	8858	9808	37137	9005	9595	9366	10424	38390	3	6	6
EPSILON	05-31	12072	14020	11227	13410	50729	13686	14896	11805	13121	53508	5	3	1
FIRST DATA MGT	12-31	9274	9281	9054	8609	36218	8035	8174	8697	8104	33010	-9	-7	-5
FIRST FIN MGT	12-31	10528	11723	13160	16944	52355	14463	15158	15469	24604	69694	33	32	33
GTECH	02-25	22036	13163	12717	27092	75008	26883	17900	26293	60374	131450	75	97	118
GENESEE	05-31	351	402	222	260	1235	262	284	253	354	1153	-7	1	26
HALE SYSTEMS	03-31	1754	1458	1383	1555	6150	1375	1102	1127	786	4390	-29	-31	-35
INFO RESOURCES	12-31	17458	18332	18261	21007	75058	21319	21773	23824	26718	93634	25	26	29
KEYDATA	07-31	1107	987	912	1279	4285	950	1049	683	646	3328	-22	-25	-39
LCS INDUST.	09-30	4581	4936	8939	8613	27069	9201	7981	10529	8883	36594	35	22	11
M/A/R/C	03-31	8462	11093	11874	16864	48293	12995	12183	13447	15800	54425	13	4	2
NATL DATA	05-31	36576	36103	38136	37067	147882	39056	37790	37607	39263	153716	4	3	2
* NETWORK D.P.	03-31	757	763	694	780	2994	763	682	795	850	3090	3	4	12
PAYCHEX	05-31	10500	10936	11700	12077	45213	13131	13766	14958	15328	57183	26	27	27
PAY-FONE	06-30	1713	1614	1686	1980	6993	1581	1707	1746	1998	7032	1	3	2
SCICOM DATA	06-30	3696	3669	3030	3622	14017	3268	3687	3356	3890	14201	1	6	9
SCS/COMPUTE	04-30	9807	1132	1157	1816	13912	11157	1283	1425	1930	15795	14	13	13
SEI	12-31	25029	26984	26890	26929	105832	28683	30353	27571	31933	118540	12	11	11
SHARED MED.	12-31	72708	76876	80292	82332	312208	87281	92494	96418	98687	374880	20	20	20
SYSTEMATICS	05-31	24443	26893	28235	30908	110479	31627	31830	31348	34184	128989	17	13	11
TELECREDIT	04-30	21639	22743	23233	29769	97384	26567	27765	29945	35070	119347	23	22	23
TELERATE	09-30	36926	40661	41757	44986	164330	50068	54300	61001	66908	232277	41	43	47
TSR	05-31	4420	4893	4569	4844	18726	4794	5299	6037	6351	22481	20	24	32
WORLCO DATA	03-31	1314	1634	2270	2088	7306	1788	2326	2600	2717	9431	29	28	22
TOTALS		804284	787573	806875	878553	3277285	944234	929816	955225	1060466	3889741	19	19	20
TOTALS WITHOUT ANACOMP		772502	755390	779255	850270	3157417	914213	901920	932505	1033468	3782106	20	20	21

* INPUT ESTIMATE

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EXHIBIT V-7

NET INCOME OF PUBLIC
PROCESSING/NETWORK SERVICES COMPANIES

COMPANY NAME	FISCAL YEAR END	NET AFTER TAX INCOME ($ Thousands)										GROWTH (Percent)		
		1985					1986					1986/ 1985 %(+/-)	LAST 3 ROLLING QUARTRS	LAST 2 ROLLING QUARTRS
		Q1	Q2	Q3	Q4	TOTAL	Q1	Q2	Q3	Q4	TOTAL			
ADP	06-30	26140	26178	18685	24590	95593	31860	30960	22690	30010	115520	21	20	22
ANACOMP	09-30	6467	666	745	99	7977	487	398	3089	2824	6798	-15	318	601
CCX NETWORK	12-31	172	352	418	448	1390	333	463	543	512	1851	33	25	22
CERT. COLLAT.	12-31	232	248	234	831	1545	475	466	586	679	2206	43	32	19
CITIZENS FIN.	09-30	400	307	297	351	1355	312	307	310	339	1268	-6	0	0
COMDATA NTWK	12-31	3400	3092	3353	2877	12722	3819	2080	3040	3264	12203	-4	-10	1
COMPUTER LAN	12-31	7164	1784	-1785	-2516	4647	5097	-1334	-513	-3035	215	-95	-94	18
COMNET	03-31	513	56	115	-1591	-907	7	136	251	303	697	177	149	138
COMPUCARD	01-31	872	786	1542	1299	4499	1342	1988	2451	2723	8504	89	97	82
COMPUTER RES	08-31	80	-33	-27	21	41	153	92	-15	82	312	661	508	1217
COMPUTER SER	02-28	185	220	229	241	875	335	190	374	374	1273	45	36	59
COMSHARE	06-30	577	350	720	721	2368	-229	130	503	656	1060	-55	-28	-20
CONCORD COMP	09-30	-190	-528	-214	2	-930	2	4	22	177	205	122	127	194
CYCARE	12-31	281	309	993	1281	2864	715	789	697	665	2866	0	-17	-40
DST SYSTEMS	12-31	2529	2352	2089	1298	8268	1840	2709	3148	5492	13189	60	98	155
DYATRON	12-31	355	301	445	1158	2259	191	26	246	1456	1919	-15	-9	6
ENDATA	12-31	-801	-354	-219	-5597	-6971	828	832	493	301	2454	135	126	114
EPSILON	05-31	143	396	-338	158	359	37	-1108	87	320	-664	-285	-425	326
FIRST DATA MGT	12-31	1821	1777	1551	740	5889	-293	-505	-188	-1810	-2796	-147	-162	-187
FIRST FIN MGT	12-31	447	609	521	602	2179	1033	1428	1443	1619	5523	153	159	173
GTECH	02-25	2723	207	457	1863	5250	-554	-839	174	7566	6347	21	173	234
GENESEE	05-31	27	22	4	14	67	25	29	16	27	97	45	80	139
HALE SYSTEMS	03-31	213	-254	-160	-111	-312	-4504	-205	-180	-498	-5387	-1627	-68	-150
INFO RESOURCES	12-31	3189	2087	1971	2938	10185	2200	2500	2637	2665	10002	-2	12	8
KEYDATA	07-31	18	64	-309	176	-51	-85	49	-285	-183	-504	-888	-507	-252
LCS INDUST.	09-30	322	407	435	377	1541	382	-100	593	310	1185	-23	-34	11
M/A/R/C	03-31	478	686	698	791	2653	610	427	325	597	1959	-26	-38	-38
NATL DATA	05-31	2220	2340	2539	2635	9734	2971	-1388	3113	3406	8102	-17	-32	26
* NETWORK D.P.	03-31	-49	72	-120	51	-46	23	-48	-14	20	-19	59	-1500	109
PAYCHEX	05-31	608	905	1017	959	3489	875	1319	1472	959	4625	33	30	23
PAY-FONE	06-30	-67	87	-17	138	141	80	104	198	328	710	404	203	335
SCICOM DATA	06-30	184	192	1	41	418	-270	142	194	277	343	-18	162	1021
SCS/COMPUTE	04-30	3200	-1006	-1062	-969	163	4344	-857	-874	-890	1723	957	14	13
SEI	12-31	885	955	1016	1087	3943	1236	916	-10189	940	-7097	-280	-372	-540
SHARED MED.	12-31	9359	10050	10868	11471	41748	11531	-7350	13533	14254	31968	-23	-37	24
SYSTEMATICS	05-31	2230	2632	2522	2841	10225	2981	3019	1765	2490	10255	0	-9	-21
TELECREDIT	04-30	65	870	783	2224	3942	1413	1414	2067	3454	8348	112	79	84
TELERATE	09-30	8657	8227	8335	8444	33663	9181	10053	11073	12915	43222	28	36	43
TSR	05-31	590	388	281	222	1481	107	37	186	206	536	-64	-52	-22
WORLCO DATA	03-31	-1832	-271	112	247	-1744	357	57	103	152	669	138	255	-29
TOTALS		83807	67528	58725	62452	272512	81247	49330	65164	95946	291687	7	12	33
TOTALS WITHOUT ANACOMP		77340	66862	57980	62353	264535	80760	48932	62075	93122	284889	8	9	29

* INPUT ESTIMATE

40 COMPANIES

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E

Public Processing/ Network Services Competitive Analysis

See Exhibit V-8 for market share information on public processing/ network services companies.

For more specific information on some of the more successful public processing/network services companies and their products, markets, and strategies, see section IV.C.1 of this report.

EXHIBIT V-8

MAJOR VENDORS' SHARES OF U.S. PROCESSING/NETWORK SERVICES MARKET - 1986

COMPANY NAME	REVENUE ($ Millions)	MARKET SHARE (Percent)
Automatic Data Processing	1135	6
Electronic Data Systems	788	4
Control Data	600	3
McDonnell-Douglas	470	3
Equifax	302	3

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VI

Software Products Sector Analysis

VI

Software Products Sector Analysis

A

Software Products Market, 1986

Total software products revenue from all types of companies was $15.2 billion in 1986, a 23% increase over 1985. This represents a 28% share of the information services marketplace.

INPUT forecasts user expenditures for software products to grow from $16.2 billion in 1986 to $52.2 billion in 1992.

The sources of software products companies' revenues in 1985 and 1986 are shown in Exhibit VI-1. Software products vendors generated 87% of their revenue from software products, slightly more than in 1985 (86%). The remaining 13% came from processing services (1%), professional services (10%), and turnkey systems (2%).

Software products revenue generated by software products companies grew 25% in 1986. Processing/network services revenue from software products companies grew only 5%, while professional services and turnkey systems revenue from these companies grew 17% and 23% respectively. Overall, revenue from software products companies grew 24% during the year.

Software products revenue generated by large software products companies (those with revenue greater than $10 million in 1986) grew 20%. Processing/network services revenue from these large software products companies grew 5%; professional services revenue grew 17%; and turnkey systems revenue grew 24%.

Breakdowns for software products companies generating 1986 revenue of $1 - $10 million and less than $1 million are provided in Exhibit VI-2.

Software products companies were responsible for 85% of all software products revenue (see Exhibit VI-3).

EXHIBIT VI-1

SOFTWARE PRODUCTS COMPANIES'
REVENUE AND GROWTH RATES
BY MODE OF SERVICE

SOFTWARE PRODUCTS COMPANIES	REVENUE SOURCE BY MODE OF SERVICE ($ Millions)				TOTAL
	Processing Services	Software Products	Professional Services	Turnkey Systems	
1985	201	10,251	1,278	214	11,944
1986	211	12,814	1,495	263	14,783
Growth Rate (Percent)	5	25	17	23	24

EXHIBIT VI-2

SOFTWARE PRODUCTS COMPANIES'
1986 GROWTH RATES
BY MODE OF SERVICE AND SIZE OF COMPANY

SOFTWARE PRODUCTS COMPANY SIZE	MODE OF SERVICE				
	Processing/ Network Services	Software Products	Professional Services	Turnkey Systems	TOTAL
>$10 Million	5	20	17	24	19
$1 - $10 Million	35	29	21	28	28
<$1 Million	17	11	13	2	11
Total	5	25	17	23	24

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EXHIBIT VI-3

TOTAL 1986 SOFTWARE PRODUCTS MARKET BREAKDOWN BY TYPE OF COMPANY
($ Millions)

SOFTWARE PRODUCTS MARKET	TYPE OF COMPANY				TOTAL
	Processing Services	Software Products	Professional Services	Turnkey Systems	
Revenue	1,117	12,814	982	242	15,154
Percent	7	85	6	2	100

- 7% of all software products revenue was generated by processing services vendors.

- 6% of the total was derived from professional services vendors.

- 2% came from turnkey systems vendors.

Growth in software products revenues generated by software products companies, processing/network services companies, professional services companies, and turnkey systems companies is shown in Exhibit VI-4. Breakdowns by size of company are included in the exhibit.

- Software products revenue generated by processing/network services companies grew 8% in 1986.

- Software products revenue from professional services companies increased 23%.

- Revenue from turnkey systems companies rose 6%.

EXHIBIT VI-4

SOFTWARE PRODUCTS MARKET GROWTH RATES
BY TYPE AND SIZE OF COMPANY

INFORMATION SERVICES COMPANY SIZE	TYPE OF COMPANY				TOTAL
	Processing/ Network Services	Software Products	Professional Services	Turnkey Systems	
>$10 Million	8	20	20	5	19
$1 - $10 Million	19	29	14	28	31
<$1 Million	<27>	11	17	11	15
Total	8	25	23	6	23

B

Application Software Market andTrends

User expenditures for application software totalled $8.6 billion in 1986. These expenditures are expected to reach $22.6 billion in 1992.

User requirements involving both the applications and systems software markets include the following:

- Connectivity that allows information about operations to be dispersed throughout the corporation on a real-time basis.

- Systems integration of different hardware, data bases, and software products into a single, cohesive system.

- Productivity—this issue has brought about a shift of systems and support activities from a centralized IS center to the departmental level. CASE Products and DBMS Tools are major growth leaders.

The current trend is to decentralize the operational responsibility, the budget responsibility, and the application responsibility. Therefore, departmental systems and department managers are an important sales focus for vendors.

The fastest growing application market is for industry-specific software, such as demand deposit accounting in banking or MRP II in manufacturing.

Applications software expenditures for departmental systems are dominated by Fortune 1000 companies. By 1992, half of the marketplace for departmental systems will be industry-specific applications for the Fortune 1000. Another 25% of these systems will be cross-industry applications for the same group.

C

Systems Software Market and Trends

Systems software remains the responsibility of the IS manager even in the decentralized environment.

User expenditures for systems software totalled $7.6 billion in 1986. These expenditures are expected to increase at an average annual rate of 25%, reaching $29.6 billion in 1992.

Standardization is an important issue in the software market. Standards facilitate market growth of application software products, and as far as the systems software market is concerned, standards accelerate the development process.

As mentioned, productivity is an important issue in the software products market. Unfortunately, systems software tools developed to improve productivity, such as fourth generation languages, program development tools, and database management systems, currently concentrate more on speeding up the creation of application code, rather than increasing the efficiency of the application itself.

In the database management systems market, the trend is toward relational structures—as opposed to hierarchical structures—in addition to the development of DBMSs that run equally well on mainframe, mini-computers, and microcomputers. Emphasis is also on tools fronting these DBMSs, such as fourth generation languages, screen handlers, and forms generators.

D

Public Software Product Company Revenue and Net Income Performance

At the end of 1986, public companies in the software products sector showed 26% growth on a rolling three quarters basis and 28% growth on a rolling two quarters basis. The group demonstrated the highest revenue growth of all information services sectors for all four quarters and the year 1986 (see Exhibits VI-5 through VI-7).

Revenue growth for public companies in this sector was 26% in 1986, compared to the 1985 growth rate of 14%.

Net income for the software products sector grew 40% in 1986. Growth was strong throughout the year with the exception of second quarter. Earnings dropped during second quarter, due primarily to significant losses from Cullinet and Scientific Software, both of which included extraordinary items.

Note that in 1986 added to INPUT's list of public software products vendors were Adobe Systems, Infodata Systems, Sage Software, Silvar-Lisco, Systems Software Associates, Synercom Technology, and Timberline Software. Applied Communications, Comserv, and Integrated Software Systems (ISSCO) were deleted from the list due to their respective acquisitions. These changes affect previously reported results for this sector.

EXHIBIT VI-5

PUBLIC SOFTWARE PRODUCTS VENDOR PERFORMANCE, 1983 - 1986
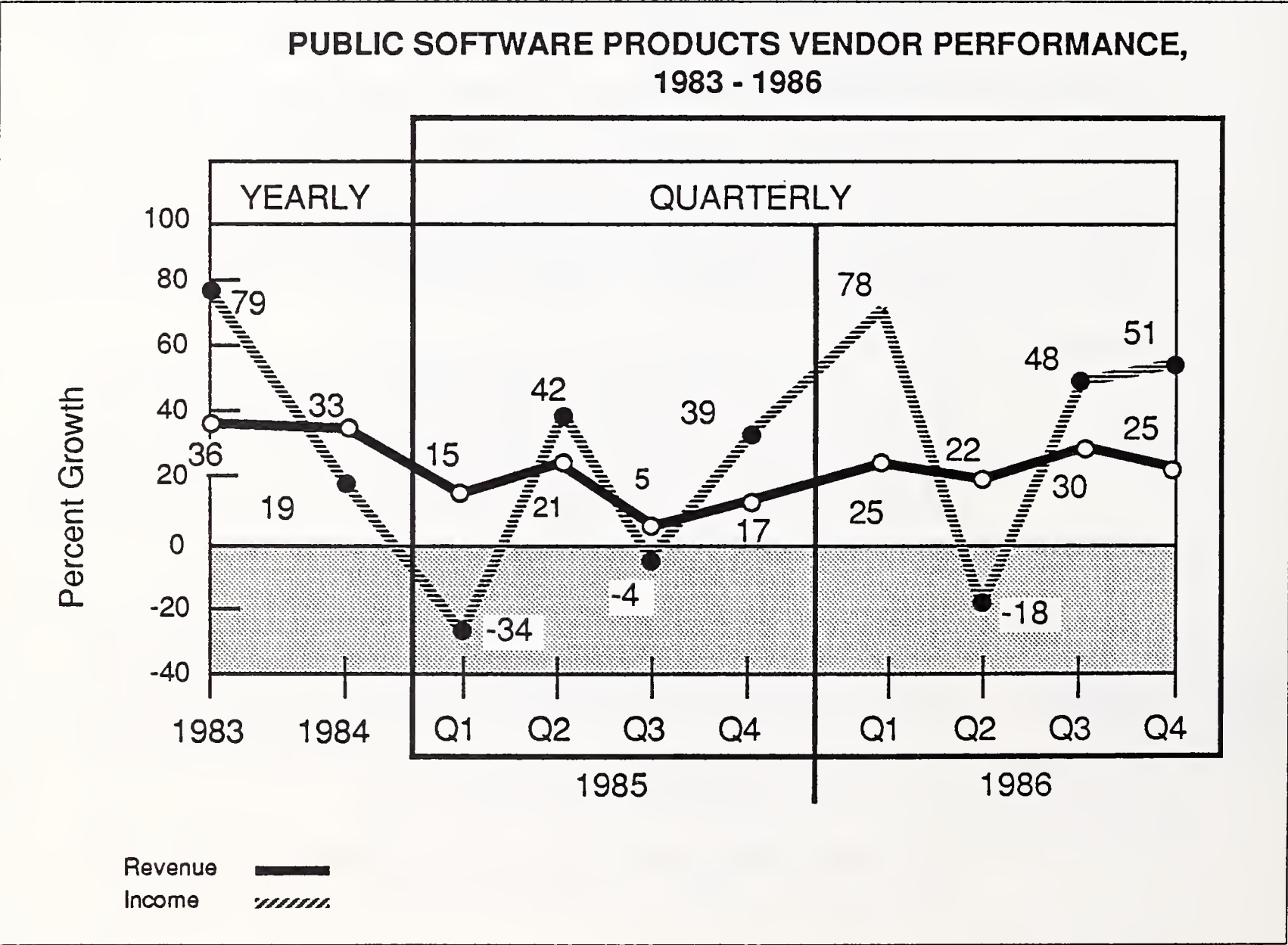
EXHIBIT VI-6

REVENUES OF PUBLIC
SOFTWARE PRODUCTS COMPANIES

COMPANY NAME	FISCAL YEAR END	REVENUE ($ Thousands)										GROWTH (Percent)		
		1985					1986					1986/ 1985 %(+/-)	LAST 3 ROLLING QUARTRS	LAST 2 ROLLING QUARTRS
		Q1	Q2	Q3	Q4	TOTAL	Q1	Q2	Q3	Q4	TOTAL			
ADOBE SYSTEMS	11-30	60	943	1648	1952	4603	2392	3498	4932	5200	16022	248	200	181
AMERICAN S/W	04-30	7813	8828	10188	8937	35766	10336	10005	10819	13087	44247	24	21	25
ASHTON TATE	01-31	23971	27501	28590	41509	121571	41171	48989	57741	62900	210801	73	74	72
AUTODESK	01-31	5066	6761	7709	9995	29531	11027	12172	13651	15531	52381	77	69	65
BGS SYSTEMS	01-31	2886	3157	3396	4585	14024	3325	3465	2907	3500	13197	-6	-11	-20
BPI SYSTEMS	03-31	2361	2344	2519	2883	10107	3192	2711	2613	1128	9644	-5	-17	-31
BOOLE & BABB.	09-30	7332	7255	7877	7838	30302	8612	8705	9365	9259	35941	19	19	19
COMPUTER AS.	03-31	37169	31257	41994	60101	170521	57680	50091	63559	93618	264948	55	55	54
CONTINUUM	03-31	17827	13945	14035	12447	58254	12247	14063	14077	14465	54852	-6	5	8
CULLINET .	04-30	52728	42277	43167	44631	182803	54221	31289	34236	43018	162764	-11	-17	-12
CYBERTEK	03-31	5482	4529	5408	6655	22074	7387	6544	6407	6517	26855	22	17	7
DUQUESNE SYS.	09-30	2663	2870	3070	4040	12643	5390	7374	7432	8635	28831	128	135	126
HEALTH SYS.	06-30	100	714	1516	863	3193	664	333	679	776	2452	-23	-42	-39
HOGAN SYS.	03-31	5604	4066	6586	9184	25440	7177	10803	9889	10019	37888	49	55	26
INFODATA SYS.	12-31	3304	2789	2210	2932	11235	2623	2233	2759	3616	11231	0	9	24
INFO. SCIENCE	04-30	6849	6589	4389	4469	22296	4666	3562	4181	3779	16188	-27	-25	-10
INNOVATIVE	06-30	1495	1382	2594	2829	8300	3622	4419	3442	3593	15076	82	68	30
LOTUS DEV.	12-31	44679	59276	49724	71847	225526	69270	66195	65560	81839	282864	25	18	21
MSA	12-31	24974	38124	30919	57644	151661	29421	47572	38764	77692	193449	28	29	31
MACNEAL-SCHW	01-31	4601	5182	5431	5887	21101	6216	6517	6980	7365	27078	28	26	27
MICROPRO INT'L	08-31	9959	10275	10736	10357	41327	10500	6898	10484	8372	36254	-12	-18	-11
MICROSOFT	06-30	40662	36918	35153	49897	162630	50505	61959	66780	80985	260229	60	72	74
NCA CORP	12-31	5194	6054	5869	4626	21743	4024	5424	5069	6264	20781	-4	1	8
ON-LINE S/W	05-31	7322	8226	7751	8566	31865	8850	11298	9688	12704	42540	34	37	37
ORACLE	05-31	5516	8458	7070	11447	32491	16031	20835	17611	28352	82829	155	148	148
PANSOPHIC	04-30	18117	16257	18883	25076	78333	21943	20117	24312	34607	100979	29	31	34
POLICY MGMT	12-31	25032	25725	25736	26338	102831	32033	35225	39739	43558	150555	46	52	60
SAGE SOFTWARE	04-30	1350	1259	2401	3135	8145	3651	2964	3402	3825	13842	70	50	31
SCIENTIFIC S.	12-31	7429	8144	7907	5762	29242	7565	6413	5774	8505	28257	-3	-5	4
SILVAR-LISCO	04-30	4407	4352	4393	4534	17686	6240	5923	6300	6082	24545	39	38	39
SOFTWARE AG	05-31	12055	14110	16036	16353	58554	14642	18727	15397	17087	65853	12	10	0
SOFTWARE PUB.	09-30	8569	9030	7121	6944	31664	5684	4606	6429	8710	25429	-20	-15	8
S/W SVC. AM.	05-31	606	405	228	1502	2741	646	424	1907	3151	6128	124	157	192
STERLING S/W	09-30	55961	62194	42456	69498	230109	58883	56512	48900	45308	209603	-9	-13	-16
STOCKHLDR SYS.	03-31	3268	2595	3735	2958	12556	3375	2403	3411	3349	12538	0	-1	1
SYSTEM SOFT.	10-31	1918	2375	3558	3558	11409	3903	3470	5275	5010	17658	55	45	45
SYNERCOM TECH.	10-31	4187	4502	4364	4610	17663	5140	3694	3881	1441	14156	-20	-33	-41
TIMBERLINE S/W	12-31	2462	2404	2689	3357	10912	2142	1606	1348	2104	7200	-34	-40	-43
UCCEL	12-31	31970	33155	30210	39475	134810	34101	34189	31011	42921	142222	5	5	6
VM SOFTWARE	12-31	3191	4206	4258	6376	18031	4313	6249	6038	10426	27026	50	53	55
TOTALS		506079	529490	511876	663645	2211090	632418	645978	667817	833098	2779311	26	26	28

INPUT ESTIMATE

EXHIBIT VI-7

NET INCOME OF PUBLIC
SOFTWARE PRODUCTS COMPANIES

COMPANY NAME	FISCAL YEAR END	NET AFTER TAX INCOME ($ Thousands)										GROWTH (Percent)		
		1985					1986					1986/ 1985 %(+/-)	LAST 3 ROLLING QUARTRS	LAST 2 ROLLING QUARTRS
		Q1	Q2	Q3	Q4	TOTAL	Q1	Q2	Q3	Q4	TOTAL			
ADOBE SYSTEMS	11-30	-367	-63	438	487	495	550	868	1168	980	3566	620	250	132
AMERICAN S/W	04-30	1388	1282	1495	1307	5472	1830	1690	2146	2903	8569	57	65	80
ASHTON TATE	01-31	2344	3456	4800	5967	16567	5124	6471	7935	10600	30130	82	76	72
AUTODESK	01-31	1114	1437	1766	2204	6521	2428	2714	3018	3461	11621	78	70	63
* BGS SYSTEMS	01-31	354	363	477	893	2087	402	221	28	800	1451	-30	-39	-40
BPI SYSTEMS	03-31	-212	56	116	154	114	159	8	-247	-1047	-1127	-1089	-494	-579
BOOLE & BABB.	09-30	-407	-1022	-4077	266	-5240	297	236	328	410	1271	124	120	119
COMPUTER AS.	03-31	3562	1397	3196	8613	16768	5326	2360	6547	16351	30584	82	91	94
CONTINUUM	03-31	2064	169	98	-737	1594	-1354	630	636	938	850	-47	569	346
CULLINET	04-30	6900	4233	3638	3846	18617	3632	-10612	-5914	-4949	-17843	-196	-283	-245
CYBERTEK	03-31	479	-334	-141	720	724	905	609	416	456	2386	230	504	51
DUQUESNE SYS.	09-30	582	564	640	941	2727	1122	1460	1487	1920	5989	120	127	115
HEALTH SYS.	06-30	-1238	-1299	-883	-1560	-4980	-2907	-3614	-442	-367	-7330	-47	-18	67
HOGAN SYS.	03-31	-12018	-2992	-443	816	-14637	-4233	544	1080	2907	298	102	273	969
INFODATA SYS.	12-31	14	-100	-353	45	-394	94	-356	268	376	382	197	171	309
INFO. SCIENCE	04-30	-2947	-847	-2791	106	-6479	-2827	-2569	-3169	-268	-8833	-36	-70	-28
INNOVATIVE	06-30	-298	-584	550	620	288	719	-341	255	111	744	158	-96	-69
LOTUS DEV.	12-31	9631	10744	6361	11414	38150	11371	11820	9528	15581	48300	27	29	41
MSA	12-31	-2721	3063	-3493	10011	6860	-410	5937	260	12954	18741	173	100	103
MACNEAL-SCHW	01-31	1079	-1064	1207	1307	2529	1667	1627	1823	1888	7005	177	268	48
MICROPRO INT'L	08-31	-870	468	1229	657	1484	900	-2409	-342	26	-1825	-223	-216	-117
MICROSOFT	06-30	8497	5608	6170	10948	31223	10629	11507	15824	19697	57657	85	107	108
NCA CORP	12-31	-1202	-55	-528	-3621	-5406	-1437	144	46	-1240	-2487	54	75	71
ON-LINE S/W	05-31	380	646	446	578	2050	686	938	735	1018	3377	65	61	71
ORACLE	05-31	141	1472	111	1147	2871	2052	2586	127	3045	7810	172	111	152
PANSOPHIC	04-30	3266	2038	3355	4880	13539	4028	2356	3644	6197	16225	20	19	20
POLICY MGMT	12-31	3827	3994	3513	3053	14387	3063	3190	3580	3927	13760	-4	1	14
SAGE SOFTWARE	04-30	-322	-31	304	424	375	532	43	420	581	1576	320	50	38
SCIENTIFIC S.	12-31	-342	147	601	-2527	-2121	23	-13272	133	-739	-13855	-553	-680	69
SILVAR-LISCO	04-30	22	44	145	26	237	255	64	12	-217	114	-52	-166	-220
SOFTWARE AG	05-31	1276	990	2880	2134	7280	1598	1933	1103	986	5620	-23	-33	-58
SOFTWARE PUB.	09-30	1304	1139	845	617	3905	365	-737	454	1236	1318	-66	-63	16
S/W SVC. AM.	05-31	175	-480	-191	301	-195	-67	-603	375	471	176	190	166	669
STERLING S/W	09-30	641	576	1459	890	3566	1924	2154	-2457	1907	3528	-1	-45	-123
STOCKHLDR SYS.	03-31	514	350	710	363	1937	729	234	708	576	2247	16	7	20
SYSTEM SOFT.	10-31	171	309	424	362	1266	393	325	680	507	1905	50	38	51
SYNERCOM TECH.	10-31	266	413	731	-744	666	1106	1448	-127	-1895	532	-20	-244	-15454
TIMBERLINE S/W	12-31	-94	-191	-105	318	-72	-66	-124	-218	256	-152	-111	-491	-82
UCCEL	12-31	2362	3560	2249	7355	15526	2830	3376	3346	10376	19928	28	30	43
VM SOFTWARE	12-31	319	591	669	1563	3142	642	966	845	2475	4928	57	52	49
TOTALS		30001	40110	37180	75657	182948	53530	32954	54871	114215	255570	40	32	50

* INPUT ESTIMATE

40 COMPANIES

CAIR

E

Public Software Products Competitve Analysis

See Exhibit VI-8 for market share information of public software products companies.

See section IV.C.2. of this report for more information on certain successful public software products companies.

EXHIBIT VI-8

**MAJOR VENDORS' SHARES OF
U.S. SOFTWARE PRODUCTS MARKET - 1986**

COMPANY NAME	1986 REVENUE ($ Millions)	MARKET SHARE (Percent)
IBM	2900	19
DEC	618	4
HP	225	1
Lotus	218	1
Computer Associates	159	1
Ashton-Tate	158	1

VII
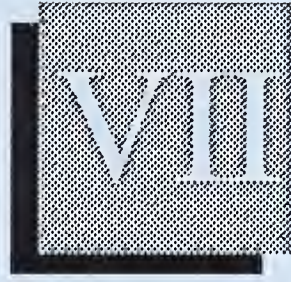
Professional Services Sector Analysis

VII

Professional Services Sector Analysis

A

Professional Services Market, 1986

Total professional services revenue from all types of companies was $12.3 billion in 1986, a 16% increase over 1985. This represents a 23% share of the information services marketplace.

INPUT forecasts user expenditures for professional services will reach $33.9 billion by 1992. Expenditures in 1986 total $12.3 billion. Annual growth during 1986-1991 will average 18%.

The sources of professional services companies' revenues in 1985 and 1986 are shown in Exhibit VII-1. Professional services vendors generated 80% of their revenue from professional services in 1986, compared to 81% of their revenue in 1985. Of the remaining revenue in 1986, 9% was derived from software products; 7% came from processing/network services; and the remaining 4% came from turnkey systems.

Professional services revenue generated by professional services companies grew 18% in 1986. Software products revenue and processing/network services revenue from professional services companies grew 23% and 21% respectively, while revenue from turnkey systems grew 59%. Turnkey systems however, remains the smallest source of revenue for this group of companies. Overall, revenue from professional services companies grew 20% during the year.

Professional services revenue generated by large professional services companies (those with 1986 revenue above $10 million) grew 22%. Software products revenue from these large professional services companies grew 20%; processing/network services revenue grew 21%; and turnkey systems revenue grew 60%.

Breakdowns for professional services companies generating 1986 revenue of $1 - $10 million and those generating less than $1 million are provided in Exhibit VII-2.

Professional services companies were responsible for 72% of all professional services revenue (see Exhibit VII-3).

EXHIBIT VII-1

PROFESSIONAL SERVICES COMPANIES' REVENUE AND GROWTH RATES BY MODE OF SERVICE

PROFESSIONAL SERVICES COMPANIES	REVENUE SOURCE BY MODE OF SERVICE ($ Millions)				TOTAL
	Processing Services	Software Products	Professional Services	Turnkey Systems	
1985	636	798	7,508	298	9,240
1986	770	982	8,859	474	11,084
Growth Rate (Percent)	21	23	18	59	20

EXHIBIT VII-2

PROFESSIONAL SERVICES COMPANIES' 1986 GROWTH RATES BY MODE OF SERVICE AND SIZE OF COMPANY

PROFESSIONAL SERVICES COMPANY SIZE	MODE OF SERVICE				TOTAL
	Processing/ Network Services	Software Products	Professional Services	Turnkey Systems	
>$10 Million	21	20	22	60	22
$1 - $10 Million	14	14	12	24	14
<$1 Million	16	17	9	31	9
Total	21	23	18	59	20

EXHIBIT VII-3

TOTAL 1986 PROFESSIONAL SERVICES MARKET BREAKDOWN BY TYPE OF COMPANY ($ MILLIONS)

PROFESSIONAL SERVICES MARKET	TYPE OF COMPANY				TOTAL
	Processing Services	Software Products	Professional Services	Turnkey Systems	
Revenue	1,641	1,495	8,859	298	12,293
Percent	13	12	72	3	100

- 13% of total professional services revenue was generated by processing/network services vendors.

- 12% of the total was derived from software products vendors.

- The remaining 3% came from turnkey systems vendors.

Growth in professional services revenues generated by professional services companies and other types of information services companies is shown in Exhibit VII-4. Breakdowns by size of company are included in the exhibit.

- Professional services revenue generated by processing/network services companies grew 8% in 1986.

- Professional services revenue from software products companies increased 17%.

- Professional services revenue from turnkey systems companies fell 3%.

EXHIBIT VII-4

PROFESSIONAL SERVICES MARKET GROWTH RATES
BY TYPE AND SIZE OF COMPANY

INFORMATION SERVICES COMPANY SIZE	TYPE OF COMPANY				TOTAL
	Processing/ Network Services	Software Products	Professional Services	Turnkey Systems	
>$10 Million	7	17	22	-2	18
$1 - $10 Million	14	21	12	0	14
<$1 Million	2	13	9	34	10
Total	8	17	18	-3	16

B

Commercial Professional Services Market and Trends

In 1986, user expenditures for commercial professional services reached $9.1 billion. This figure represents 74% of the total professional services user expenditures in 1986. Commercial user expenditures for professional services are expected to grow 23% in 1987 and an average of 20% per year during the next five years, reaching $27.7 billion in 1992.

Software development will continue to be the largest segment of the commercial professional services market over the next five years. This segment is expected to grow from $5.5 billion in 1986 to $12.6 billion in 1992 at an average annual growth rate of 14% during 1987-1992.

Growth and profitability in this service mode depend upon the professional services vendor's ability to develop expertise and specialization in specific vertical industry markets as well as in applications for those markets.

Systems integration, consulting, and education and training will continue to be the fastest growing segments within commercial professional services during the next five years.

INPUT expects education and training services for commercial users to continue to shift in emphasis from mainframe computing to end-user computing.

A significant opportunity for commercial professional services vendors is in networks – including electronic mail systems, integration of data and voice communications, and possibly voice mail – although many companies are currently planning to develop these networks themselves.

C

Government Professional Services Market and Trends

Expenditures made by the federal government for professional services reached $3.2 billion in 1986. This figure is expected to increase to $6.3 billion by 1992, growing at an average annual rate of 12% during 1987-1992.

Systems integration is the fastest growing segment of the federal government professional services industry and is projected to become the largest share of federal expenditures by the year 1992.

Programming and analysis is the second fastest growing segment of federal professional services during the period 1987-1992, although growth is substantially below previous levels. The demand for vendor assistance in this service mode stems from staffing limits, the backlog of software maintenance tasks at most government data centers, and the shortfall of programming skills in the federal government sector.

Agencies often need assistance in producing technical justification for planned improvements in information technology. However, deficit reduction measures, along with increased use of systems integration contractors for design services, have reduced the level and growth of consulting services from previous years.

Facilities management, a mature market in the federal government, is also characterized by task reductions by agencies under pressure from the Gramm-Rudman-Hollings (GRH) Act.

The principle focus of education and training, also affected by the substantial budgets of the GRH Act, will be the large number of fourth generation replacement systems for ADP architectures of the IBM 360-370 era. The changes in end-user computing, local area networks, distributed processing, and new software will require retraining of more than half of the current federal government ADP work force.

D

Public Professional Services Company Revenue and Net Income Performance

At 1986 year end, public companies in the professional services sector showed 20% growth on a rolling three quarters basis as well as on a rolling two quarters basis. Growth was approximately 19% for six consecutive quarters prior to and including fourth quarter 1986 (see Exhibits VII-5 through VII-7).

For public companies in this sector, revenue growth was 19% for the year 1986, compared to 17% in 1985 and 15% in 1984.

Net income for the professional services sector grew 20% in 1986. Earnings growth was strong the last three quarters of 1986, after dropping during each of the two previous quarters—fourth quarter 1985 and first quarter 1986. The decrease during fourth quarter 1985 made 1985 a year of flat earnings growth for this sector. The decrease during first quarter 1986 was due to systems and Computer Technology's loss, which included a $14.9 million charge related to a class action settlement.

Note that in 1986 INPUT added the following companies to its list of public professional services vendors: NSA, Scientific Systems Services, and Softech. Planning Research was removed from the previous list due to its acquisition by Emhart Industries. The most significant change from earlier reports resulting from the additions is a lower 1985 second quarter net income growth rate. Scientific Systems Services and SofTech experienced significant losses during this quarter.

EXHIBIT VII-5

PUBLIC PROFESSIONAL SERVICES VENDOR PERFORMANCE, 1983 - 1986
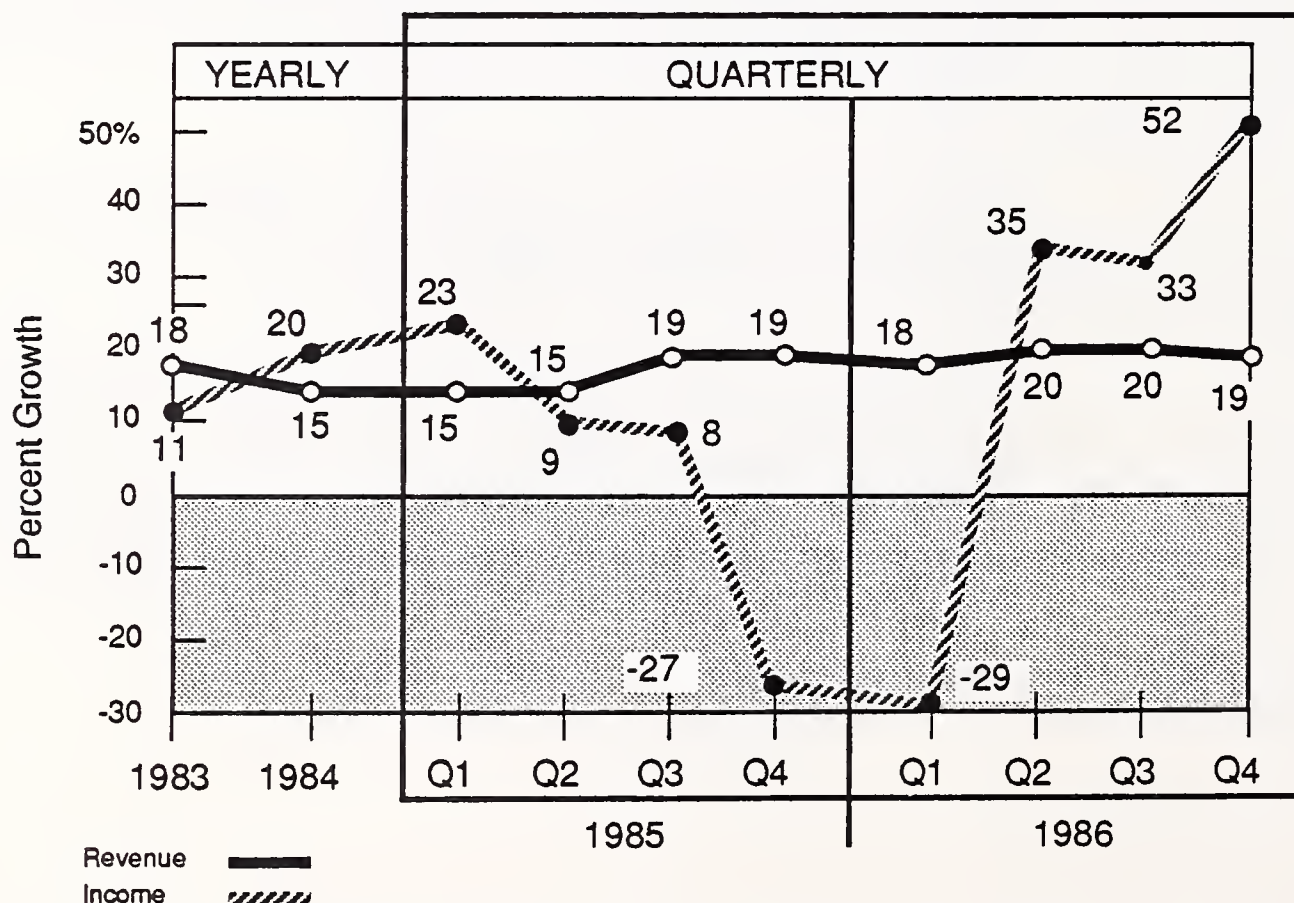
EXHIBIT VII-6

REVENUES OF PUBLIC
PROFESSIONAL SERVICES COMPANIES

COMPANY NAME	FISCAL YEAR END	REVENUE ($ Thousands)										GROWTH (Percent)		
		1985					1986					1986/ 1985 %(+/-)	LAST 3 ROLLING QUARTRS	LAST 2 ROLLING QUARTRS
		Q1	Q2	Q3	Q4	TOTAL	Q1	Q2	Q3	Q4	TOTAL			
202 DATA SYS	10-31	489	562	487	494	2032	503	446	2287	569	3805	87	114	191
ACT	12-31	3036	3526	4050	4064	14676	3452	3979	4392	3356	15179	3	1	-5
ADV.SYSTEMS	10-31	11529	11254	18175	12973	53931	13151	14628	22492	14003	64274	19	21	17
AGS COMPUTER	12-31	65742	70327	67617	75496	279182	82571	89290	95398	114445	381704	37	40	47
AM. MGT. SYS	12-31	26647	27260	26750	31560	112217	29663	32798	35943	37117	135521	21	24	25
ANLYSTS INT.	06-30	11954	12549	11792	11228	47523	11586	12126	12048	13862	49622	4	7	13
AUXTON COMP	12-31	6453	7182	7100	7124	27859	7670	7742	7650	7267	30329	9	6	5
BDM INTERN'L	12-31	50764	62021	63727	73786	250298	70663	79815	89535	82185	322198	29	26	25
BBN	06-30	35294	41614	39211	44511	160630	45003	49324	48631	53653	196611	22	21	22
C.A.C.I.	06-30	24961	23990	22818	24335	96104	24912	26635	26097	29199	106843	11	15	17
COMP DATA	06-30	12666	13097	13828	13813	53404	13684	13245	11839	12995	51763	-3	-7	-10
COMP HORIZ	02-28	11973	12507	12605	12901	49986	12879	14151	14350	14633	56013	12	13	14
CSC	04-01	198887	187565	209286	204949	800687	236787	233998	249428	257489	977702	22	23	22
COMP TASK GR	12-31	26035	28166	29565	31945	115711	32711	35463	36518	38738	143430	24	23	22
DATA ARCHTS	11-30	4264	5347	5415	5919	20945	5883	6650	6740	7812	27085	29	27	28
DYNAMICS RES	12-25	14633	14242	14448	20916	64239	17160	17819	17803	22410	75192	17	17	14
INTERMETRICS	02-28	10587	11324	12273	10123	44307	10184	11991	12714	11622	46511	5	8	9
KEANE	12-31	9951	10341	9462	9947	39701	9821	9593	10438	10500	40352	2	3	8
LOGICON	03-31	43689	44100	50277	50438	188504	53587	50242	51598	49120	204547	9	4	0
NSA	09-30	1385	1620	1629	1522	6156	1465	1795	2096	2087	7443	21	25	33
RAND INFO.	02-28	2924	2611	2600	4600	12735	2641	1900	1557	2443	8541	-33	-40	-44
SCI SYS SVC	12-31	6719	1608	8584	5601	22512	5126	5362	5278	4717	20483	-9	-3	-30
SOFTECH	05-31	8998	10391	9520	11096	40005	11327	13205	10691	10537	45760	14	11	3
SYSCON CORP	11-30	26174	28462	29867	32783	117286	29231	33872	34519	37827	135449	15	17	15
SYST.& COMP.	09-30	12512	11874	10792	10693	45871	10469	10137	10224	10110	40940	-11	-9	-5
TECHNALYSIS	12-31	3128	3142	3176	3299	12745	3077	3213	3517	3719	13526	6	9	12
TOTALS		631394	646682	685054	716116	2679246	745206	779419	823783	852415	3200823	19	20	20

EXHIBIT VII-7

NET INCOME OF PUBLIC
PROFESSIONAL SERVICES COMPANIES

COMPANY NAME	FISCAL YEAR END	NET AFTER TAX INCOME ($ Thousands)										GROWTH (Percent)		
		1985					1986					1986/ 1985 %(+/-)	LAST 3 ROLLING QUARTRS	LAST 2 ROLLING QUARTRS
		Q1	Q2	Q3	Q4	TOTAL	Q1	Q2	Q3	Q4	TOTAL			
202 DATA SYS	10-31	5	3	52	126	186	141	56	315	101	613	230	161	134
ACT	12-31	83	135	191	117	526	136	289	215	60	700	33	27	-11
ADV.SYSTEMS	10-31	1166	1204	2489	1170	6029	1355	1379	3528	1539	7801	29	33	38
AGS COMPUTER	12-31	1925	1734	1854	1980	7493	1580	2133	2310	2729	8752	17	29	31
AM. MGT. SYS	12-31	1269	1658	1031	1432	5390	902	1122	1488	1719	5231	-3	5	30
ANLYSTS INT.	06-30	454	546	102	-142	960	-569	-345	-890	713	-1091	-214	-203	-343
AUXTON COMP	12-31	340	461	620	615	2036	633	684	756	452	2525	24	12	-2
BDM INTERN'L	12-31	2130	2512	2600	3314	10556	2861	3490	3050	4184	13585	29	27	22
BBN	06-30	2190	2446	2349	2592	9577	2973	3418	3177	3364	12932	35	35	32
C.A.C.I.	06-30	770	553	297	175	1795	105	477	455	706	1743	-3	60	146
COMP DATA	06-30	723	582	638	642	2585	545	514	356	401	1816	-30	-32	-41
COMP HORIZ	02-28	643	666	500	537	2346	508	513	526	616	2163	-8	-3	10
CSC	04-01	7232	5199	4928	4958	22317	8863	6652	7168	7580	30263	36	42	49
COMP TASK GR	12-31	773	893	1096	1259	4021	1331	1331	1160	1260	5082	26	15	3
DATA ARCHTS	11-30	306	364	291	281	1242	344	401	353	537	1635	32	38	56
DYNAMICS RES	12-25	437	252	-1049	668	308	514	546	590	806	2456	697	1605	466
INTERMETRICS	02-28	155	183	-2615	-2834	-5111	383	247	43	157	830	116	108	104
KEANE	12-31	233	191	141	201	766	231	-181	4	229	283	-63	-90	-32
LOGICON	03-31	2210	2378	2511	2484	9583	2541	2382	2162	2248	9333	-3	-8	-12
NSA	09-30	-77	-10	-14	77	-24	-17	106	170	104	363	1613	617	335
RAND INFO.	02-28	-236	-307	-402	674	-271	46	-673	-813	-572	-2012	-642	-5780	-609
SCI SYS SVC	12-31	-115	-2113	-412	-1867	-4507	-210	59	75	160	84	102	107	110
SOFTECH	05-31	198	-1757	442	500	-617	579	635	475	490	2179	453	296	2
SYSCON CORP	11-30	986	1103	1149	1190	4428	1103	1319	1409	1532	5363	21	24	26
SYST.& COMP.	09-30	627	97	-1082	-128	-486	-9610	-749	-4323	-467	-15149	-3017	-398	-296
TECHNALYSIS	12-31	257	289	311	334	1191	207	244	294	311	1056	-11	-9	-6
TOTALS		24684	19262	18018	20355	82319	17475	26049	24053	30959	98536	20	41	43

26 COMPANIES

E

Public Professional Services Competitve Analysis

See Exhibit VII-8 for market share information of public professional services companies.

See section IV.C.3. of this report for more information on some of the more successful public processing services companies.

EXHIBIT VII-8

MAJOR VENDORS' SHARES OF U.S. PROFESSIONAL SERVICES MARKET - 1986

COMPANY NAME	1986 REVENUE ($ Millions)	MARKET SHARE (Percent)
IBM	1495	12
CSC	614	5
BDM International	322	3
Planning Research	255	2
Unisys	241	2
EDS	241	2

Turnkey Systems Sector Analysis

VIII

Turnkey Systems Sector Analysis

A

Turnkey Systems Market, 1986

Total turnkey systems revenue from all types of information services companies was $7.9 billion in 1986, an 11% increase over 1985. This represents a 14% share of the information services marketplace.

INPUT predicts that user expenditures for turnkey systems will reach $13.3 billion by 1992. This figure compares to a 1986 expenditure level of $7.8 billion. The 1986-1987 growth rate forecasted is 11%; average annual growth during 1987-1992 is forecasted to be 9%.

The sources of turnkey systems companies' revenues in 1985 and 1986 are shown in Exhibit VIII-1.

Turnkey systems vendors generated 88% of their revenue from turnkey systems in both 1985 and 1986. The remaining 12% of revenue in 1986 was split evenly between processing/network services, software products, and professional services.

Turnkey systems revenue generated by turnkey systems companies grew 8% in 1986. Turnkey systems companies are growing faster in processing/network services: in 1986, processing/network services revenue generated by turnkey systems companies grew 15%; Software products revenue generated by turnkey systems companies grew 6%; professional services revenue from this group actually fell 3% from 1985.

Turnkey systems revenue generated by large turnkey systems companies (1986 revenue greater than $10 million) grew 8%. Processing/network services revenue from these large turnkey systems companies grew 15%; software products revenue grew 5%; and professional services revenue dropped 2%.

Breakdowns for turnkey systems companies generating 1986 revenues of $1 - $10 million and those generating less than $1 million are provided in Exhibit VIII-2.

EXHIBIT VIII-1

TURNKEY SYSTEMS COMPANIES'
REVENUE AND GROWTH RATES
BY MODE OF SERVICE

TURNKEY SYSTEMS COMPANIES	REVENUE SOURCE BY MODE OF SERVICE ($ Millions)				TOTAL
	Processing Services	Software Products	Professional Services	Turnkey Systems	
1985	210	228	307	5,622	6,367
1986	242	242	298	5,959	6,740
Growth Rate (Percent)	15	6	-3	6	6

EXHIBIT VIII-2

TURNKEY SYSTEMS COMPANIES' 1986 GROWTH RATES
BY MODE OF SERVICE AND SIZE OF COMPANY

TURNKEY SYSTEMS COMPANY SIZE	MODE OF SERVICE				TOTAL
	Processing/ Network Services	Software Products	Professional Services	Turnkey Systems	
>$10 Million	15	5	-2	8	8
$1 - $10 Million	12	28	0	<2>	<11>
<$1 Million	-	11	34	<32>	<21>
Total	15	6	-3	8	8

EXHIBIT VIII-3

TOTAL 1986 TURNKEY SYSTEMS MARKET
BREAKDOWN BY TYPE OF COMPANY
($ MILLIONS)

TURNKEY SYSTEMS MARKET	TYPE OF COMPANY				TOTAL
	Processing Services	Software Products	Professional Services	Turnkey Systems	
Revenue	1,068	263	474	6,072	7,877
Percent	14	3	6	77	100

Turnkey systems companies were responsible for 77% of all turnkey systems revenue (see Exhibit VIII-3). The remaining 23% of total turnkey systems revenue came from processing/network services companies, software products companies, and professional services companies.

• 14% came from processing/network services companies.

• 39% came from software products companies.

• 6% came from professional services companies.

Growth in turnkey systems revenues generated by turnkey systems companies and other types of information services companies is shown in Exhibit VIII-4. Breakdowns by size of company are included in the exhibit.

• Turnkey systems revenue generated by processing/network services companies grew 10% in 1986.

• Turnkey systems revenue generated by software products companies increased 23%.

• Turnkey systems revenue generated by professional services companies increased 59%.

EXHIBIT VIII-4

TURNKEY SYSTEMS MARKET GROWTH RATES
BY TYPE AND SIZE OF COMPANY

INFORMATION SERVICES COMPANY SIZE	TYPE OF COMPANY				TOTAL
	Processing/ Network Services	Software Products	Professional Services	Turnkey Systems	
>$10 Million	10	24	60	8	11
$1 - $10 Million	5	28	24	<2>	<2>
<$1 Million	<4>	2	31	<32>	<32>
Total	10	23	59	8	11

B

Industry-Specific Turnkey Systems Market andTrends

User expenditures for industry-specific turnkey systems reached $5.3 billion in 1986. These expenditures are expected to increase 13% in 1987 to $6.0 billion and an average of 11% for the next five years, reaching $9.9 billion in 1992.

The turnkey systems market has experienced erratic growth and an erosion of market share. One factor is that customers want to utilize computer systems installed in-house and, therefore, purchase application software. Those with very specific system requirements utilize their internal development staff or professional services vendors.

Another factor is that turnkey systems vendors, who act as VARs for hardware vendors, are, in some cases, losing the hardware portion of the sales to the hardware vendors due to the competition in the areas of pricing and maintenance services. In addition, hardware vendors such as IBM and DEC are providing systems "solutions," taking further market share from turnkey systems vendors.

To counter some of these factors, turnkey systems vendors are providing more customization and modification of systems in order to meet user requirements. Success for industry-specific turnkey systems vendors

requires specialization and expertise in the targeted vertical-industry market and in the application being developed. For this reason, CAD/CAM/CAE systems vendors have performed well.

To succeed in the long run, vendors will have to provide systems that handle more than one aspect or function of the targeted vertical-industry market. For example, they will have to develop manufacturing systems that handle all functions of manufacturing, not just material requirements planning.

C

Cross-Industry Systems Market and Trends

The cross-industry turnkey systems market has experienced the same erratic growth and erosion of market share depicting the turnkey systems market as a whole.

User expenditures for cross-industry turnkey systems was $2.5 billion in 1986. These expenditures are forecasted to grow only 7% in 1987 and an average of 5% during the next five years, reaching $3.4 billion in 1992.

As with the industry-specific side of the market, success in the cross-industry turnkey systems market is dependent not only on the increased functionality of a particular application, but also on the expansion of application coverage in the cross-industry market served.

Rather than increasing the features and functions of a specific application such as accounts receivable, vendors can provide systems that include general ledger, accounts payable, accounts receivable, fixed assets, purchase order, and other accounting-related functions that will serve the needs of a larger market.

D

Public Turnkey Systems Company Revenue and Net Income Performance

At the end of 1986, public turnkey systems companies demonstrated 13% growth on a rolling three-quarters basis and 17% growth on a rolling two-quarters basis. Growth was 18% and 15% for third and fourth quarters 1986 respectively, whereas growth was considerably lower (between 2% and 6%) for the four quarters prior to that (see Exhibits VIII-5 through VIII-7).

For public companies in this sector, revenue growth was 11% for the year 1986, compared to 7% for 1985.

Net income for public companies in the turnkey systems sector grew 526% in 1986. These results were primarily due to Computervision's recovery after sustaining heavy losses each quarter in 1985. Net income for the group fell 95% during 1985.

Note that in 1986 INPUT added the following companies to its list of public turnkey systems vendors: Baron Data Systems, Barrister Information Systems, CompuTrac, and ISC Systems. SAI was acquired and removed from the list. These changes affected previously reported 1985 results only slightly.

EXHIBIT VIII-5

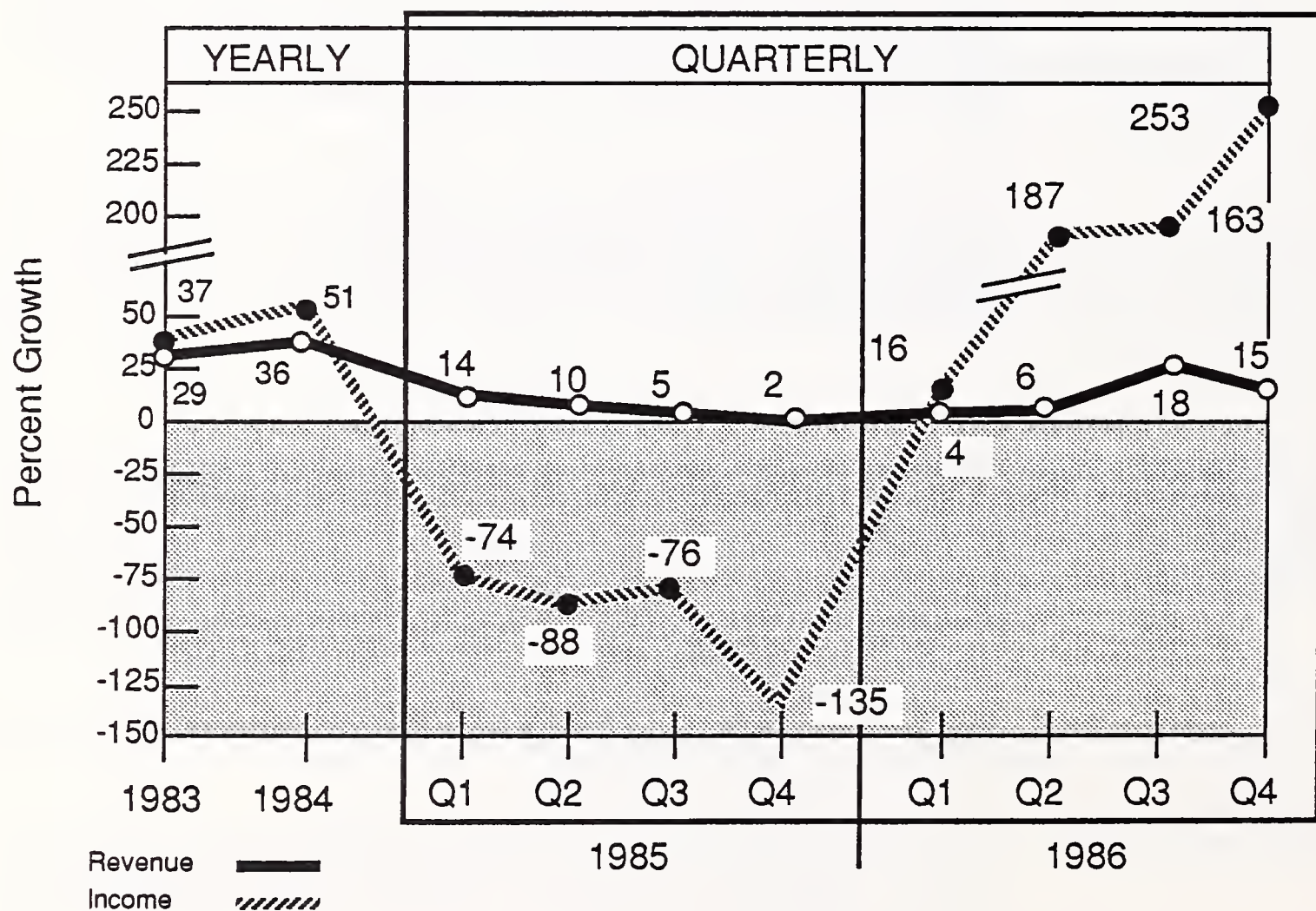**PUBLIC TURNKEY SYSTEMS VENDOR PERFORMANCE, 1983 - 1986**

EXHIBIT VIII-6

REVENUES OF PUBLIC
TURNKEY SYSTEMS COMPANIES

COMPANY NAME	FISCAL YEAR END	REVENUE ($ Thousands)										GROWTH (Percent)		
		1985 Q1	Q2	Q3	Q4	TOTAL	1986 Q1	Q2	Q3	Q4	TOTAL	1986/ 1985 %(+/-)	LAST 3 ROLLING QUARTRS	LAST 2 ROLLING QUARTRS
ASK COMPUTER	06-30	19187	20761	12780	19051	71779	17601	26587	20344	21159	85691	19	29	30
AUTO-TROL TECH	12-31	18901	16383	14286	15790	65360	15595	14860	15400	16494	62349	-5	1	6
AVANT-GARDE	04-30	3690	5555	3118	3631	15994	4005	4449	4629	4986	18069	13	14	42
BARON DATA SYS	03-31	4214	4951	5479	7182	21826	6712	5805	13632	15648	41797	92	99	131
BARRISTER INFO	03-31	8040	5558	6367	6529	26494	10877	5563	8152	8583	33175	25	21	30
C3	03-31	18758	19068	23300	11200	72326	11700	14700	21420	25297	73117	1	15	35
COMTEK RESEARCH	03-31	6685	6723	7185	6797	27390	7825	7151	7952	9219	32147	17	17	23
COMPTR CONSOLES	12-31	25976	35076	25386	25442	111880	21184	33085	34009	41279	129557	16	26	48
COMPTR DESIGN	08-31	768	639	967	760	3134	940	846	894	694	3374	8	3	-8
COMPUTERVISION	12-31	105871	112288	105752	117226	441137	112918	119339	125920	136495	494672	12	14	18
COMPUTRAC	01-31	1857	2194	2012	2076	8139	2405	2884	2911	2800	11000	35	37	40
DAISY SYSTEMS	09-30	29042	32511	35511	36573	133637	22488	23089	24999	25380	95956	-28	-30	-30
DIMIS	12-31	345	182	149	328	1004	222	325	250	300	1097	9	33	15
GERBER SCI.	04-30	64427	48341	45089	49420	207277	48936	54405	56314	53351	213006	3	15	16
HBO	12-31	44171	46400	49320	48944	188835	41198	37567	35962	40095	154822	-18	-21	-23
INTERGRAPH	12-31	108973	130556	131406	155470	526405	147016	150371	150967	157383	605737	15	10	7
INTERLEAF	03-31	4266	2789	3775	5242	16072	6840	6405	8578	10405	32228	101	115	111
ISC SYSTEMS	06-30	38098	44900	37779	40947	161724	41000	46360	40223	34797	162380	0	-2	-5
NATL DATA COMM	10-31	1606	1667	1385	1281	5939	1259	1246	1281	1071	4857	-18	-17	-12
PENTA SYSTEMS	12-31	4395	5484	4959	4817	19655	5849	5191	5475	5049	21564	10	3	8
REYNOLDS & R.	09-30	82501	83215	85012	80560	331288	87662	102140	133649	128999	452450	37	47	59
TENERA	06-30	5353	5773	5892	6899	23917	6536	9247	9590	9800	35173	47	54	52
TRIAD SYSTEMS	09-30	22431	27522	33400	27700	111053	25600	26321	32045	27200	111166	0	-3	-3
TOTALS		619555	658536	640309	673865	2592265	646368	697936	754596	776484	2875384	11	13	17

INPUT ESTIMATE

EXHIBIT VIII-7

NET INCOME OF PUBLIC
TURNKEY SYSTEMS COMPANIES

| COMPANY NAME | FISCAL YEAR END | NET AFTER TAX INCOME ($ Thousands) | | | | | | | | | | GROWTH (Percent) | | |
| | | 1985 | | | | | 1986 | | | | | 1986/ 1985 %(+/-) | LAST 3 ROLLING QUARTRS | LAST 2 ROLLING QUARTRS |
		Q1	Q2	Q3	Q4	TOTAL	Q1	Q2	Q3	Q4	TOTAL			
ASK COMPUTER	06-30	1788	2317	694	1839	6638	1371	1985	1775	1995	7126	7	19	49
AUTO-TROL TECH	12-31	-251	-4974	-3897	-2557	-11679	-1603	-1778	-691	-2966	-7038	40	52	43
AVANT-GARDE	04-30	392	-269	-1293	-1279	-2449	-2313	-774	-895	-541	-4523	-85	22	44
BARON DATA SYS	03-31	289	157	287	571	1304	331	233	277	425	1266	-3	-8	-18
BARRISTER INFO	03-31	1324	-86	195	272	1705	1264	-574	16	302	1008	-41	-167	-32
C3	03-31	873	768	1400	-335	2706	-327	518	4	1681	1876	-31	20	58
COMTEK RESEARCH	03-31	333	268	240	5	846	82	124	201	283	690	-18	19	98
COMPTR CONSOLES	12-31	-5505	-4610	-4216	-27580	-41911	-5624	-886	1633	1894	-2983	93	107	111
COMPTR DESIGN	08-31	73	74	63	87	297	56	112	-80	20	108	-64	-77	-140
COMPUTERVISION	12-31	-18766	-19510	-20723	-21778	-80777	-7006	-3404	1165	3471	-5774	93	102	111
* COMPUTRAC	01-31	199	360	286	271	1116	379	514	633	500	2026	82	80	103
DAISY SYSTEMS	09-30	4685	5532	5882	6312	22411	-4705	-1828	-860	1293	-6100	-127	-108	-96
* DIMIS	12-31	-307	-357	-272	-86	-1022	-241	-167	-200	-100	-708	31	35	16
GERBER SCI.	04-30	6546	4331	4206	4657	19740	4996	4689	4789	5226	19700	0	11	13
HBO	12-31	5867	6107	5903	2965	20842	746	-6256	924	974	-3612	-117	-129	-79
INTERGRAPH	12-31	14340	16735	18018	18686	67779	18003	17343	15496	19520	70362	4	-2	-5
INTERLEAF	03-31	437	-1362	-963	-376	-2264	258	-1154	-251	353	-794	65	61	108
ISC SYSTEMS	06-30	2100	3289	2649	3289	11327	3700	4217	2809	29	10755	-5	-24	-52
NATL DATA COMM	10-31	-272	-1073	-638	-331	-2314	-406	634	-331	7	-96	96	115	67
PENTA SYSTEMS	12-31	-482	-1307	-1870	-4003	-7662	252	223	331	-194	612	108	105	102
REYNOLDS & R.	09-30	4785	4984	7182	4901	21852	5419	6512	7024	4494	23449	7	6	-5
TENERA	06-30	-1389	-4037	292	-2000	-7134	519	663	-1414	1100	868	112	106	82
TRIAD SYSTEMS	09-30	-3574	207	-517	403	-3481	551	689	1538	833	3611	204	3190	2180
TOTALS		13485	7544	12908	-16067	17870	15702	21635	33893	40599	111829	526	2092	2458

* INPUT ESTIMATE

23 COMPANIES

CAIR

E

Public Turnkey Systems Competitve Analysis

See Exhibit VIII-8 for market share information of public professional services companies.

See Section IV.C.4 of this report for more information on successful public turnkey systems companies.
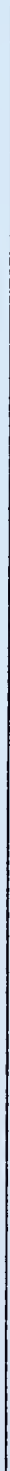
EXHIBIT VIII-8

MAJOR VENDORS' SHARES OF U.S. TURNKEY SYSTEMS MARKET - 1986

COMPANY NAME	1986 REVENUE ($ Millions)	MARKET SHARE (Percent)
Intergraph	400	5
Reynolds & Reynolds	220	3
McDonnell Douglas	218	3
GE - Calma	180	2
ISC Systems	154	2
Gerber Scientific	130	2

IX

European Information Services Market

IX

European Information Services Market

A

European Information Services Market

Expansion of the European information services market has provided opportunities in all delivery modes.

The rapid growth of the financial markets and the increased sophistication of software systems has encouraged new competitors to enter the European market for information networks.

In the area of software development, European vendors, like U.S. vendors, are shifting from traditional cross-industry application development to specialized vertical-industry applications.

Major driving forces in professional services growth include shortages of key in-house processing staff, particularly in areas like telecommunications, and increased size and complexities of implementing company-wide information technology strategies.

Turnkey systems growth in Europe has been attributed to the availability of low-cost hardware, specialized applications requirements, and related turnkey support services such as installation support.

User expenditures for all European information services were approximately $24 billion in 1986. Expenditures are expected to be approximately $29 billion in 1987 and grow at an annual average rate of 18% for the next five years, reaching $68 billion in 1992 (see Exhibit IX-1).

INFORMATION SERVICES USER EXPENDITURES WESTERN EUROPE
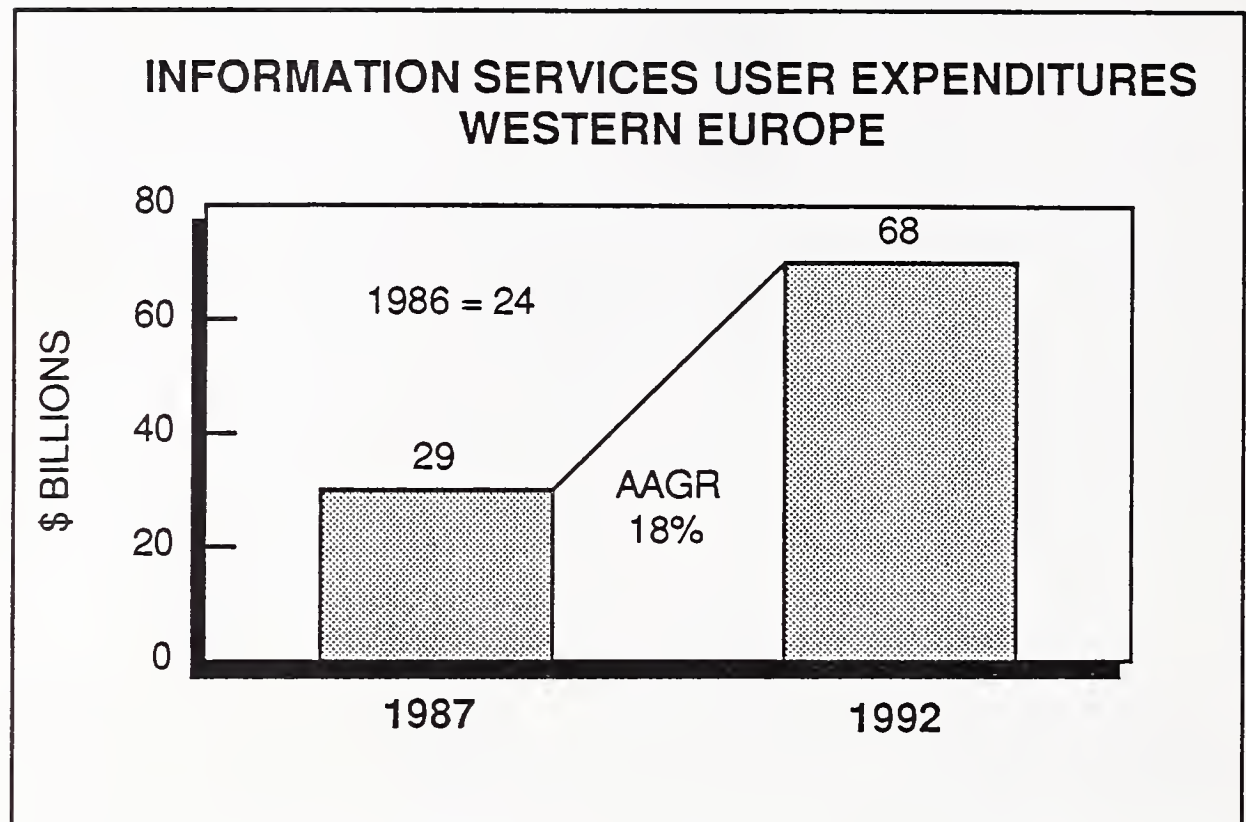
B

European Information Services by Delivery Mode

Exhibit IX-2 provides 1986 Western European user expenditures for information services broken down into processing/network services, software products, professional services, and turnkey systems, in addition to 1987 and 1992 growth projections for these four delivery modes.

- Processing/network services are expected to grow an average of 9% per year during 1987-1992, reaching $9.9 billion in 1992.

- Software products are projected to grow an average of 24% annually to reach $22.0 billion in 1992.

- INPUT forecasts growth in professional services to be 20% per year during the next five years, reaching $23.9 billion in 1992.

- Turnkey systems will reach $12.6 billion in 1992, growing an average annual rate of 17% during these years.

EXHIBIT IX-2

EUROPEAN INFORMATION SERVICES
USER EXPENDITURES BY DELIVERY MODE

Bar chart. Y-axis: Information Services Market ($ Billions), scale 0 to 25.

Delivery Mode	1986	1987	1992
Processing Services	5.5	6.5	9.9
Software Products	6.0	7.6	22.0
Professional Services	7.6	9.4	23.9
Turnkey Systems	4.8	5.8	12.6

Legend:
1986
1987
1992
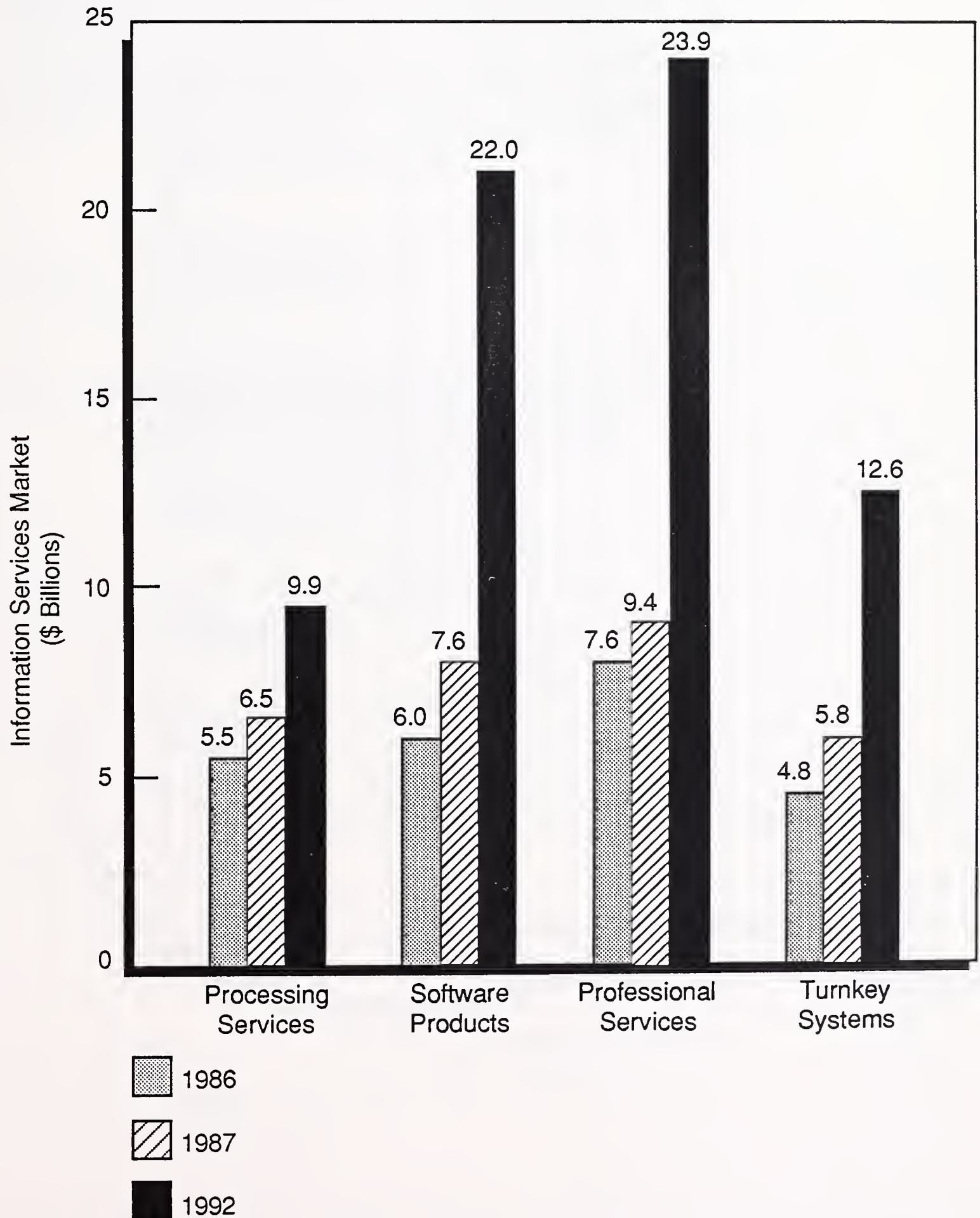
C

European Information Services Market by Country

Exhibit IX-3 shows 1987 user expenditures for information services in Europe—$29.3 billion—broken down by market share for each country.

At an average annual growth rate of 21% and 20% over the next five years, Italy and the United Kingdom are projected to grow faster than the other European countries. France, the largest European information services market, is expected to grow 17% per year during the next five years. INPUT forecasts all other European countries to grow 18% per year during 1987-1992. Exhibit IX-4 shows 1987-1992 user expenditures for each European country.

EXHIBIT IX-3

EUROPEAN INFORMATION SERVICES MARKET SHARES BY COUNTRY
1987

France 24%

United Kingdom 18%

West Germany 20%

Other European 8%

Benelux 8%

Italy 11%

Scandanavia 11%

$29.3 Billion
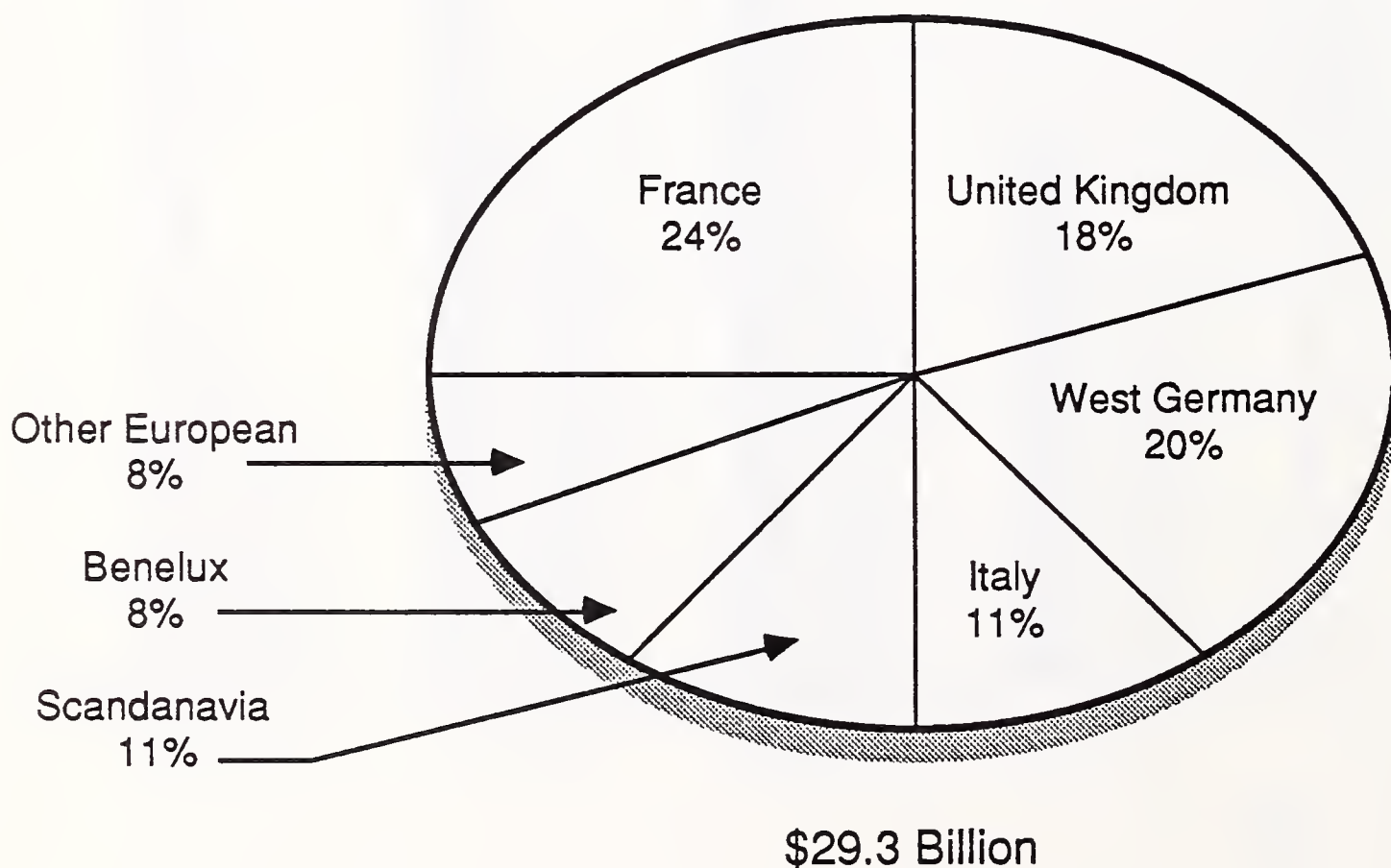
EXHIBIT IX-4

FORECAST OF EUROPEAN INFORMATION SERVICES USER EXPENDITURES BY COUNTRY
1987-1992

Country	1992	1987
France	15.3	6.9
United Kingdom	13.4	5.4
West Germany	13.3	5.8
Italy	8.1	3.2
Scandanavia	7.1	3.2
Benelux	5.3	2.3
Other European	5.9	2.5

USER EXPENDITURES
($ Billions)

1987
1992

A

Appendix
Definition of Terms

A
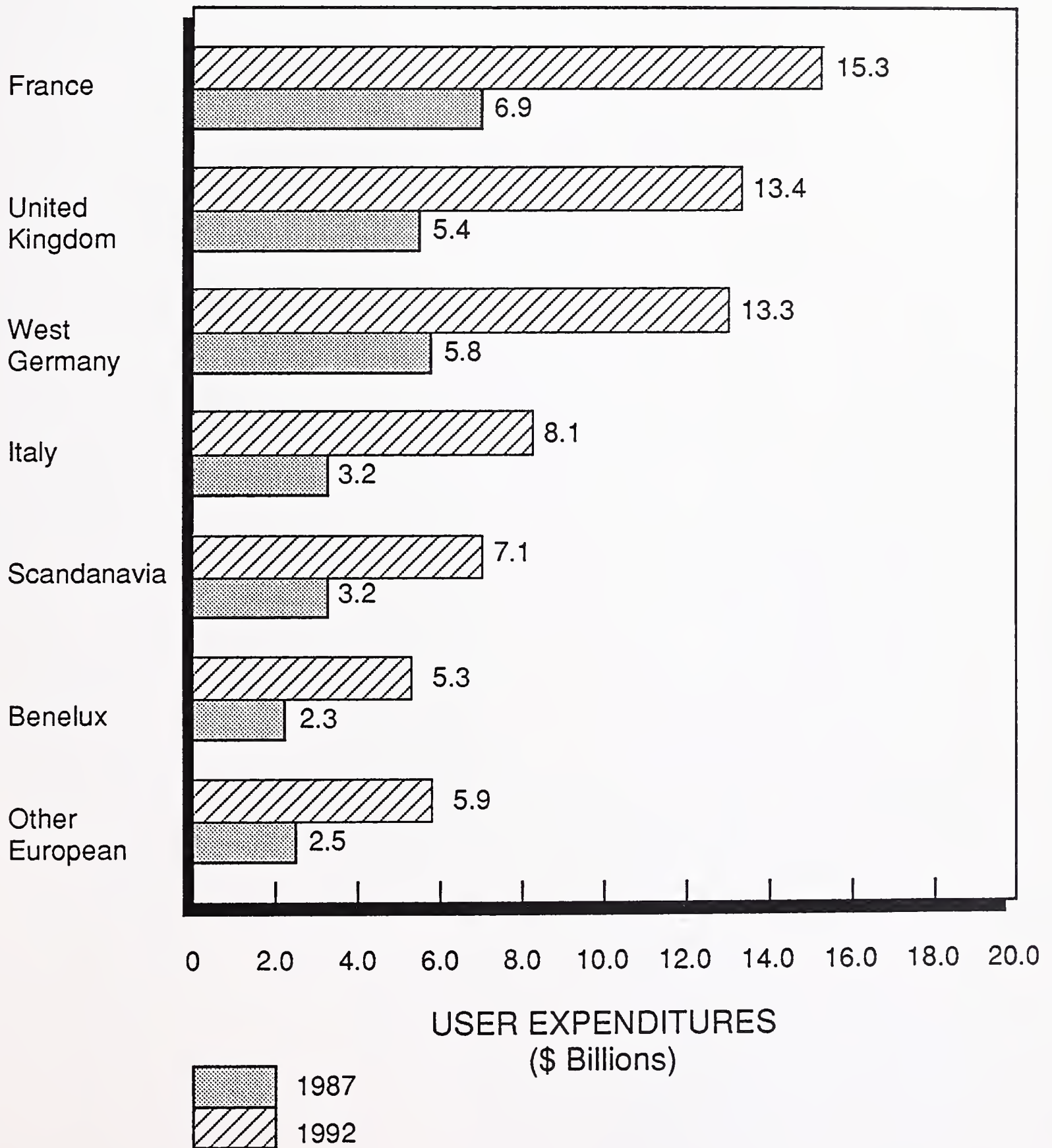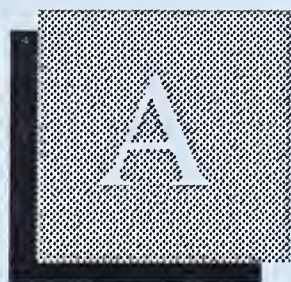
Appendix
Definition of Terms

A
Revenue

- CAPTIVE COMPUTER SERVICES REVENUE - Revenue received from users who are part of the same parent corporation as the vendors.

- NONCAPTIVE FOREIGN COMPUTER SERVICES REVENUE - Revenue received for computer services provided outside the U.S. from users who are not part of the same parent corporation as the vendors.

- NONCAPTIVE U.S. COMPUTER SERVICES REVENUE - Revenue received for computer services provided within the U.S. from users who are not part of the same parent corporation as the vendor.

- OTHER REVENUE - Revenue derived from lines of business other than those defined above.

- TOTAL COMPANY REVENUE - Revenue received from total computer services and other sources of revenue.

- TOTAL COMPUTER SOFTWARE AND SERVICES REVENUE - Revenue received from services provided by vendors that perform data processing using vendor computers (processing services), assist users to perform such functions on their own computers (software products and/ or professional services), provide a combination of hardware and software integrated into a total system (turnkey systems). Revenue derived from computer services games or entertainment is excluded, as is revenue derived solely from the resale of computer services on a retail basis.

B
Service Modes

- PROCESSING SERVICES - Remote computing services, value-added networks, batch services, and facilities management.

  - BATCH SERVICES - This includes data processing performed at vendors' sites of user programs and/or data that are physically trans-

ported (as opposed to electronically by telecommunications media) to and from those sites. Data entry and data output services, such as keypunching and computer output microfilm processing, are also included. Batch services include these expenditures by users who take their data to a vendor site that has a terminal connected to a remote computer for the actual processing.

- REMOTE COMPUTING SERVICES - Provision of data processing to a user by means of terminals at the user's site connected by a data communications network to the vendor's central computer.

- VALUE-ADDED NETWORKS (VAN) - Intercommunications services between computing resources to move data and/or textual information. Provided by vendors through common carrier or special-purpose transmission facilities to move data and/or textual information. Special features of VANs that set them apart from conventional public networks include store-and-forward message switching, terminal interfacing, error detection and correction, and host computer interfacing.

- PROCESSING SERVICES FACILITIES MANAGEMENT (FM) (Also referred to as "resource management" or "systems management") - The management of all or part of a user's data processing functions under a long-term contract (not less than one year). This would include both remote computing and batch services. To qualify as FM, the contractor must directly plan and control as well as operate the facility provided to the user on-site, through communications lines or mixed modes. Simply providing resources, even though under a long-term contract and/or for all of a user's processing needs, does not necessarily qualify as FM.

• PROFESSIONAL SERVICES - The category includes the following types of information services:

- SOFTWARE DEVELOPMENT - This service develops a software system on a custom basis. It includes one or more of the following: user requirements, systems design, and programming.

- CONSULTING SERVICES - Consultants advise clients on computer-related issues that are usually management oriented. Feasibility studies and computer audits are examples of services provided.

- EDUCATION AND TRAINING - These services help people acquire new skills, techniques, or knowledge related to computer systems. This definition does not include services to education institutions. (This latter market is included in the education [industry-specific] segment.)

- PROFESSIONAL SERVICES FACILITIES MANAGEMENT - This service includes management of all or a significant part of a user's data processing functions under a long-term contract (not less than one year). To qualify as professional services facilities management, the contractor must directly plan and control as well as operate the client's facility, where the computers are usually owned by the client. This normally includes providing programming, maintenance, documentation, planning, and operations support for a computer facility.

- SYSTEMS INTEGRATION - Systems integration is a process in which a vendor or team of vendors assumes total responsibility for providing the information products/services which result in a comprehensive solution to an information systems problem. In this process, the customer-integration arrangement is such that the customer is made to feel that one vendor (prime contractor) is providing all aspects of the solution. To the extent possible, other vendors (subcontractors) are transparent to the customer.

• SOFTWARE PRODUCTS - This category includes users' purchases of applications and systems packages for use on in-house computer systems. Included are lease and purchase revenues as well as fees for work performed by the vendor to implement and maintain the package at the user's site. Fees for work performed by organizations other than the package vendor are counted in professional services. There are several subcategories of software products.

- APPLICATIONS PRODUCTS - These are software products that perform processing to service user functions. They consist of:

• CROSS-INDUSTRY PRODUCTS - which are used in multiple-user industry sectors. Examples are payroll, inventory control, and financial planning.

• INDUSTRY-SPECIFIC PRODUCTS - which are used in a specific industry sector such as banking and finance, transportation, or discrete manufacturing. Examples are demand deposit accounting and airline scheduling.

- SYSTEMS PRODUCTS - These are software products that enable the computer/communications system to perform basic functions. They consist of system operations products, systems utilization products, and application development products.

• TURNKEY SYSTEMS - An integration of systems and applications software with hardware packaged as a single entity. The value added by the vendor is primarily in the software, either packaged or custom developed. Most CAD/CAM systems and many small business systems are turnkey systems. This does not include specialized hardware sys-

tems such as word processors, cash registers, and process control systems. In previous reports these companies have been referred to as "integrated systems," but the name was changed this year to the more common "turnkey systems."

C
Public Information

- PROFIT MARGINS - Profits after taxed and extraordinary items.

- REVENUE GROWTH - Derived from one or more of the following:

  - ACQUISITION - Proportion of revenue increase derived from the acquistion of other companies.

  - PRICE INCREASE - Proportion of revenue increase derived solely from increasing the price of services.

  - REAL GROWTH - Proportion of revenue increase derived from all sources net of the effect of price increases and acquisitions.

B
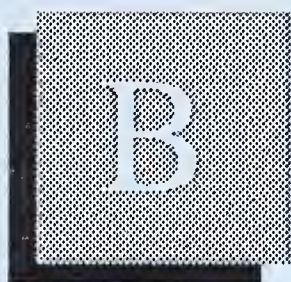
Appendix
Questionnaire

B

Appendix
Questionnaire

1987 Information Services Industry Survey

Purpose of the Survey

This survey is the basis of the authoritative presentation of 1986 Information Services Industry performance. The presentation will be delivered to the financial community, the government, the press, and others including user industry groups and associations. Your input is vital to obtain the most accurate picture of performance as possible and to ensure that your company is accurately represented in industry participant rankings.

Definitions

A wide variety of industry terms are referred to in this survey. For your convenience, survey term definitions are enclosed.

SURVEY ASSISTANCE HOTLINE: (415) 960-3990

If you have questions about the survey, require clarification of definitions, or would like to complete it with INPUT staff by telephone, please call the hotline. We would be happy to assist you!

1.   Company Data

a. Company Name _____

Headquarters Address _____

City _____ State _____ Zip _____

Telephone _____

Respondent Name _____

Title _____

Telephone _____

b.   Parent Company (if applicable)

Name _____

Address _____

City _____ State _____ Zip _____

c.   Corporate Ownership (check one)

_____ Public Year Incorporate _____

_____ Private Date Company Went Public _____

_____ Subsidiary

2.   *What were the total company revenues for fiscal year ending 1985 and 1986:* (PLEASE ESTIMATE IF NECESSARY)

FYE 1986 $ _____   FYE 1985 $ _____
                (000)   (000)

Fiscal Year Ends what month? _____

(Interviewer: IF LAST ANSWER NOT DECEMBER, ASK Q2a.)

2a.   If you do not use a calendar year, please estimate revenues for the calendar year ending December 1986:

$ _____ Growth from Calendar 1985 _____%
      (000)

(Interviewer: PLEASE TRY TO GET RESPONDENT TO BE CONSISTENT - EITHER PERCENT OR DOLLAR AMOUNT. TRUNKATE NUMBER $000)

	Calendar Year 1986	1985
3. a. *Of your total calendar year revenue what percent (or amount) was derived from computer services?*	_____	_____
b. *Of that total computer services revenue, what percent (or amount) was captive (in-house)?*	_____	_____

c. *Of your total noncaptive computer services*   _____   _____
   revenue what percent (or amount) was derived
   from the U.S. market?

(THE REST OF THE QUESTIONS IN THE INTERVIEW RELATED TO THE
NONCAPTIVE U.S. REVENUE, ITEM C. WORK FOR OTHER COMPANIES).

4.   *What is your planned growth rate for this computer services revenue for 1987?*

   _____%

5a.   I will read you a list of service modes and ask you the revenue (domestic, outside company)
      for each in 1985 and 1986 and in the federal market in 1986.

SERVICE MODES	PERCENT OF REVENUE		1986 MARKET	
	Calendar 1985	Calendar 1986	Federal	Non-Federal
Total Processing Service				
Remote Computing	_____%	_____%	_____	_____
Batch Processing	_____%	_____%	_____	_____
Facilities Management	_____%	_____%	_____	_____
	100%	100%		
Total Software Products				
Applications	_____%	_____%	_____	_____
Systems	_____%	_____%	_____	_____
	100%	100%		
Total Professional Services				
Software Development	_____%	_____%	_____	_____
Consulting	_____%	_____%	_____	_____
Education and Training	_____%	_____%	_____	_____
Facilities Management	_____%	_____%	_____	_____
Systems Integration	_____%	_____%	_____	_____
	100%	100%		

Total Turnkey Systems _____ _____ _____   _____

_____ _____ _____   _____

Total Service Modes   100%   100%   100%   100%

VANS (will be handled separately - Questioner, ignore this)

5b.   *If Federal Revenue is less than 50%, what is the chief industry that you serviced?*

_____

6.   *What percent of your software or other products is bought from another vendor and resold?*

_____%

What products? _____

7a.   Now I will read you the list of service modes again and ask you what percent or amount of
      revenue from each mode was cross-industry and industry specific, and how the revenue
      broke down by size of computer.

      (NOTE: IF RESPONDENT CANNOT BREAKDOWN TO CROSS OR SPECIFIC
      INDUSTRY SEGMENT PUT IN CROSS-INDUSTRY COLUMN AND NOTE WITH
      DOUBLE STARS**).

Service Mode and Hardware	1986 Cross Industry Segment	Percent Change From 1985	1986 Industry Specific Segment	Percent Change From 1985
Processing Services	_____	_____	_____	_____
Software Products*	_____	_____	_____	_____
Micro	_____	_____	_____	_____
Mini	_____	_____	_____	_____
Mainframe	_____	_____	_____	_____
Professional Services	_____	_____	_____	_____

Turnkey Systems*   _____ _____ _____ _____

    Micro   _____ _____ _____ _____

    Mini   _____ _____ _____ _____

    Mainframe   _____ _____ _____ _____

    Total _____   + _____ =   100%

*Now thinking about that answer as 100% what would the breakout for micro, mini and mainframe be for?

**Entire Revenue Amount

7b.   What contributed to any changes in revenue from 1985 to 1986?

	What Percent of Change (+ or -)
Factor	
Price Increase	_____
Product Change	_____
More Volume	_____
Acquisitions/Divestitures	_____
Resale of Other Vendor Products	_____

8a.   *During fiscal 1985 or 1986 did your company acquire or divest any computer services firms?*

_____Yes   _____No

8b.   IF YES, please indicate company(s) acquired/divested, service mode of acquired/divested company, and revenue contribution from the acquired/divested company.

| | | Principle | Are Revenues Included |
Date	Name	Service Mode	In Your Total?
			Yes (Amount) No
a. _____	_____	PS SW PF TS	_____ _____
b. _____	_____	PS SW PF TS	_____ _____

c.   _____   _____PS SW PF TS   _____ _____

d.   _____   _____PS SW PF TS   _____ _____
                                     1   2   3   4

94

1.   PS = Processing Services

2.   SW = Software Products

3.   PF = Professional Services

4.   TS = Turnkey Systems

9.   *Number of employees in domestic noncaptive information services?*

                        1985   1986

     Number at Year End (Calendar)   _____   _____

C

Appendix
Related INPUT Reports

C

Appendix
Related INPUT Reports

- Company Analysis and Monitoring Program (CAMP) Company Directory

- Information Services Industry-Specific and Cross-Industry Markets

- U.S. Processing/Network Services Markets, 1987-1992

- U.S. Software Products Markets, 1987-1992

- U.S. Professional Services Markets, 1987-1992

- U.S. Turnkey Systems Markets, 1987-1992

- Vendor Financial Watch, published quarterly.

- U.S. EDI Services, 1987-1992

- Federal Government Professional Services Market

- European Information Services, 1986-1991